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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1928

(WITH BALANCE-SHEET FOR 1927),

BY THE

SECRETARY,

G. C. DRUCE, D.Sc., LL.D., F.R.S.,
HON. FELLOW, BOTANICAL SOCIETY, EDINBURGH.
PRESIDENT OF THE ASHMOLEAN NATURAL HISTORY SOCIETY.
CORR. MEMB. SOC. BOT. GENEVE ET CZECHO-SLOVAKIA.

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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

(VOL. VIII. PART V.).

Victoria Regina.

Floreat flora.

REPORT FOR 1928.

BY THE

SECRETARY,

G. CLARIDGE DRUCE, F.R.S.,

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CONTENTS.

Balance-Sheet for 1927, ... 599
Secretary's Report for 1928, ... 599
Plant Notes for 1928. ... 608
Notes on Publications, New Books, etc., ... 642
Obituaries, ... 700
    Christy, Robert Miller.
    Coulter, John Merl.
    Cumming, Linnaeus.
    Enander, Rev. Dr Sven Johan.
    Franklen, Sir Thomas Mansel.
    Grey, Lady, of Fallodon.
    Harford, Beatrice.
    Henriques, Dr Julio Augusto.
    Lambourne, Baron.
    Lindman, Carl A. M.
    Linton, Rev. E. F.
    Matzumura, Prof. Janzo.
    Robinson, E. Kay.
    Shoolbred, William A.
    Smith, William G.
    Thellung, Dr A.
    Thiselton-Dyer, Sir W. T.
    Yapp, Prof. Richard H.
New County and other Records, ... 722
Notes on the Vegetation of Zetland, by W. R. Price, ... 770
Bramble Notes, by William Watson, ... 782
Hybrids between Habenaria viridis (L.) Br. and the Palmate Orchids, by P. M. Hall, ... 789
Notes on some Hampshire Orchids, by R. B. Ullman and P. M. Hall, ... 791
Pansy Records, by Eric Drabble, D.Sc., ... 794
Plant Notes, by E. and H. Drabble, ... 798
Notes on Potamogeton natans L., by J. Gordon Dalgleish, F.L.S. 801
Nature's Species and Human Races in their Environment, by E. Almquist, ... 805
Flora's League, by Sir Maurice Abbot-Anderson, ... 807
Notes on Mentha, by J. Fraser, ... 809

THE BRITISH BATRACHIA, by W. H. Pearsall, ... 811
THE FLORA OF FOULA, by W. B. Turrill, ... 838
BRITISH BRAMBLES, by C. G. Trower, ... 851
NOTES ON THE SECOND EDITION OF THE "BRITISH PLANT LIST," ... 867
"BRITISH PLANT LIST"—ADDITIONS AND CORRECTIONS, ... 878
PERSONALIA AND VARIOUS NOTES, ... 884
ADDITIONS AND CORRECTIONS, ... 890
SUPPLEMENT: "THE FLORA OF WEST ROSS."

THE

BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

THE REPORT OF THE SECRETARY & TREASURER,

G. CLARIDGE DRUCE, YARDLEY LODGE, OXFORD,

FOR 1928.

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Audited and found correct.—F. A. Bellamy, F.R.A.S., 5th January 1929.

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Strong pressure has been made to bring out interim reports, but for the present such a plan is impracticable.

The gratitude of the Exchange members is due to Mr W. B. Turrill for his careful work as Distributor when 31 members sent in 4804 sheets. He has also edited the Report in an excellent manner.

The year 1928 was not remarkable for any very striking discoveries, but the Violet, *V. arenicola*, was found in Lincolnshire by the Rev. W. Wright Mason. It had once only been found in Britain by the Secretary at Bradenham, Buckinghamshire. Col. H. H. Johnston got about six new species of *Taraxacum* in Orkney and Zetland, while 17 more were found by myself and another by Mrs Wedgwood. M. Patrice de Riencourt gave a new name, *Scandalioides*, to the very handsome *Lotus* from Unst, Zetland and the Isle of Harris. If it retains its characters in cultivation it will be a welcome addition to rock-gardens. *Bursa rubella* was gathered by me at Guildford, Surrey, and as a forma of it at Dropmore, Bucks.

There have been many new county records and important extensions of the known range of several plants in Britain. Notable among these is *Scirpus americanus* Pers. from S. Lancashire, where it was discovered by Mr R. E. D. Baker. It is new to the main British Isles. The first English record of *Isoetes echinospora* was made by a Cambridge undergraduate in Dorsetshire. The specimen was sent to me on July 7 through Sir W. Abbot-Anderson. The Hon. Mr Justice Talbot discovered *Weingaertneria* in some quantity on the dunes in South Lancashire, and *Circaea alpina* in Carmarthenshire, and he and Mr Meade Waldo added *Bartsia viscosa* to Kent. *Pyrola rotundifolia* was shown to me in Bagley Wood, Berks, where it was found by Mr Greening of the School of Forestry. It may have been accidentally or intentionally introduced in Bagley Wood, where so much experimental planting has recently been done. This wood has been so well worked by Oxford botanists that at present its indigenity is doubtful. Miss I. M. Roper refound *Erodium Ballii* in Co. Down. The Secretary found *Potamogeton Drucei* in Dorsetshire in plenty—its third known station, also *Thymus zetlandicus* and *Drucei* in Harris; *Alchemilla subcrenata* and *curtiloba*, new to Ireland, in Co. Antrim; *Rosa Afzeliana* in Staffordshire, and *Euphrasia latifolia* in Harris. *Dondia fruticosa*, in N. Lincoln, was reported by Dr H. B. Willoughby Smith, and *Elatine hexandra* in Dorset by Mr L. B. Hall. These form quite a respectable list.

On Monday, March 5, a long-thought-of scheme matured when I left England via Dover, Calais and Bale, reaching Milan on Tuesday. I took the opportunity of climbing once again that "mount of marble." Next day we went to Genoa to see that superb city and to take our berths on the sumptuous Sitmar liner that was to convey us eastwards. Passing Elba, on the Friday we landed at Naples to see the Solfaterra and the Temple of Baiae, and to watch the smoke and occasionally the fire rising out of Vesuvius. On Sunday we passed Crete so close as to be almost within a stone's throw, landing at Alexandria on Monday. Starting on Tuesday by the Khedival line, we had some hours at Port Said, and on Thursday reached Limassol in Cyprus—the longed-for goal, where we worked assiduously till Friday, the 6th of April. Of the results one hopes to give a detailed account. Suffice to say that we noted 746 species, of which forty were new to the Island. These included what is probably a new Tulip and Ivy and Mint. On our return we had about six days in Egypt, reaching Oxford on April 18.

On May 12, the earliest meeting of members of the B.E.C. took place at Breccles, near Thetford, when the Hon. Mrs Montague entertained the Rt. Hon. Mr and Mrs Reginald M'Kenna, Capt. and the Lady Kathleen Stanley, Lady Lucas and Dingwall, the Rt. Hon. Mr Harold Baker, Lady Gwendolen Churchill, the Hon. Mrs R. Asquith, and others. *Veronica verna*, *Viola anglica*, *Muscari*, *Ornithogalum umbellatum*, *Tillaea*, *Valerianella carinata*, *Doronicum Pardalianches* were among the plants noted.

On June 3 we saw *Juncoides pallescens* and *Viola montana* and its hybrids at Wood Walton; and *Melampyrum cristatum* at Monkswood.

On June 8 Mrs Buckler was our hostess in Teesdale when, with Miss Buckler, Lady Charles Bentinck, and Miss Grenfell, we saw most of the Teesdale rarities, despite the backwardness of the season.

On the 12th we met at Major and Mrs Guthrie Watson's at Culeaze in Dorset when, with the Hon. Mrs Adeane and the Hon. Mrs and Miss Campbell, we visited Abbotsbury and the Swannery, where *Althaea* and *Lathyrus maritimus* were seen. We motored to Child Okeford and saw masses of *Potamogeton Drucei* in the Stour—its third known locality. On Friday, Mr P. M. Hall fetched me from Culeaze and we motored to Ridge, where there were quantities of *Scorzonera* mostly over flower, also *Carum verticillatum*, *Chenopodium urbicum* and *Alopecurus bulbosus*. Then we went on to Hinton Admiral, where *Lobelia urens* was plentiful and to the New Forest, where *Gladiolus* persists. Mr Ullman came down to Fareham and, with Mr Hall, an examination of the Hampshire marshes and chalk-downs was made for Orchids (see separate paper). *O. praetermissa* hybrids were seen in many places.

On June 24 a visit to Guildford afforded *Bursa rubella* and we saw in the classic spot *Hieracium surrejanum* and its variety. *Fragaria vesca*, var. *bercheriensis*, was noticed in its original habitat.

On the 30th a party met at the Earl and Countess Buxton's at Newtimber, when Shoreham was explored, an erect form of *Vicia lutea* being noticeable. Arundel and Amberley were visited, *Verbascum Lychnitis* being rare.

On July 4, with Sir Roger Curtis, the Burton-on-Trent sidings were explored. 134 aliens were noted, including *Convolvulus tricolor*, *Rumex crispus* × *palustris*, *Festuca Danthonii*, *Echium italicum*, *Herniaria hirsuta* (scarce), and *Lotus tetragonolobus*.

On the 6th I went to Bacres, where Miss Grenfell took us to Stowe, Hanslope, and Pyrford. *Cynoglossum montanum*, *Anthemis tinctoria* and *Hieracium stoloniflorum* were seen in their old homes. Lady Alethea Buxton and Miss Backhouse found *Roemeria* at Hambleden in Bucks on flour mill refuse. With it grew *Silene muscipula* and other aliens.

A fortnight in July was spent at Amhuinnsuidh in the island of Harris as the guest of Sir Samuel Scott. The expedition was made in order to look for a plant which appears in our list as *Carex spiculosa*, var. *hebridensis*, but a prolonged search proved a failure. It is supposed to be a hybrid in which the littoral *salina* is one of the parents. The original and only record of forty years ago located it at about 400 feet altitude, above Loch Langavat and about 300 yards from it—a most unusual habitat for a *salina* form. The season was backward, and the sedge and other vegetation was poor, many of the sedges being nearly barren and very small. Abnormal specimens of *Goodenowii* were common, as also of *binervis*, but nothing like *spiculosa*, of which subsequently Mr Arthur Bennett kindly gave me a fragmentary specimen, was seen. *Radiola*, *Drosera obovata*, *Carex limosa*, *C. dioica*, *C. pulicaris* (abundant), *Malaxis*, *Utricularia minor* and *Ranunculus Flammula*, var. *petiolaris*, were observed. On the sands at Husinish *Orchis incarnata*, var. *dunensis* and *pulchrior*, *O. praetermissa*, var. *pulchella*, *Viola Curtisii*, *V. rupestris*, *Cerastium tetrandrum*, var. *congestum* Dr., *Agropyron junceum* and *Hackelii* were noted, and a glorious form of *Lotus corniculatus*, named by M. P. de Riencourt as *Scandalioides*. *Thymus zetlandicus*, *T. britannicus*, *T. Drucei* and *T. pycnotrichus* were also seen. At, or near, Nisishee, Obbe, and Leverborough, *Polygala dubium*, *Scirpus rufus*, magnificent *Viola Curtisii*, *Arenaria peploides*, var. *diffusa*, *Euphrasia latifolia*, *Orchis praetermissa*, var. *pulchella*, and its hybrid with *maculata*, were gathered. The island recalls Zetland in its general vegetation and in the micro forms of many of its plants. Like the Zetlands, too, there is a practical absence of trees beyond stunted *Populus tremula* and *Pyrus Aucuparia*. As in Zetland, *Lonicera* was flowering freely. *Bursa concava* and *sinuosa* were seen at Tarbert. The high ground was too misty for exploration, but the alpine flora is very meagre. Even *Saxifraga stellaris* is rare. One cannot repay Sir Samuel Scott for his extreme kindness in affording me every possible facility, and for his lavish hospitality. A visit was paid to the Callinish Stones in the Lewis, but flowers were few. Some hybrids of *Orchis maculata* with forms of *praetermissa*, *Castalia alba*, var. *occidentalis*, and *Sparganium angustifolium*, were seen.

In August, with Mr and Mrs R. H. Williamson, we motored round Ireland, starting northwards from Dublin to Belfast. Cave Hill was explored and *Alchemilla curtiloba*, *A. subcrenata*, *Bursa sinuosa* and *B. concava*, were found. We then journeyed to Lough Neagh, where a few examples of *Spiranthes Romanzoffiana*, var. *stricta*, were seen; then to Londonderry, Letterkenny, and Kilmacrenan, where our search for *Arctostaphylos alpina* was abortive. In the large flax fields we could find no Dodder, but one of them yielded a few specimens of *Lolium remotum* and *Agrostis nigra*. The enormous area of sand-hills at Dunfanaghy in Donegal proved very unproductive. Unfortunately, bad weather set in as we motored through Maas, Andara and Killybegs to Carrick. By the banks of the Carrick river we got a striking variety of *Hieracium umbellatum*—var. *chloromelanum* Dahlst., new to the British Isles. We then went on by Donegal and Laghy to Ballyshannon but, although *Hieracium hibernicum* was seen, owing to the spate it was out of reach. We then journeyed by Bundoran to Sligo, where Anacoona was climbed. The *Arenaria* and *Euphrasia salisburgensis* were seen, and on Benbulben *Polygala Babingtonii.* In Glen Car *Sisyrinchium angustifolium* was noticed. *Geranium phaeum* occurred as a garden stray. The environs of Sligo had *Epilobium roseum.* Thence we went to Ballina, Bangor and Achill Island to see the famous cliffs, noting on the way masses of *Erica mediterranea*, var. *hibernica*, in two forms, and *Viola epipsila.* On the extensive salt flats near the Cathedral Rocks a curious form of *Plantago Coronopus*, in which the rosette of leaves occurred about an inch from the soil, was seen. We went on by Achill Sound to Newport and Westport, thence by Killary Bay, where *Gunnera* was naturalised and seeding freely, to Kylemore, where *Utricularia intermedia* was found; then to Clifden and Roundstone, seeing *Erica Mackayi*, *Daboecia* and *Rosa omissa*; thence by Glendalough to Cashel, Oughterard, Galway, Ballyvaghan and Glen Cahir to see *Potamogeton parpusillus*, *Equisetum variegatum* forms, *Saxifraga Sternbergii*, *Adiantum Capillus-veneris*, *Asplenium marinum*, *Euphrasia salisburgensis* and *Orchis O'Kellyi.* We visited Lisdoovarna and the magnificent cliffs of Moher, where *Cerastium tetrandrum*, var. *zetlandicum*, and *Thymus Drucei* grow, and by Ennistymon, to Limerick, where the Shannon works were inspected. Our route then led by Charleville to Mallow, Killarney, Killorglin, Cahirciveen, Waterville, Parknasilla and Kenmare. No *Spiranthes* was noticed at Waterville. *Viola pseudo-mirabilis*, *Pinguicula grandiflora*, *Saxifraga Geum* and *hirsuta*, and *Orobanche Hederae* were recorded. About Cahirciveen the Japanese *Ligustrum ovalifolium* was an ingredient in the hedges. Then we went by the old road to Kenmare where *Hieracium Scullyi* persists, and on to Glengariff, where Mrs Allan Bryce's beautiful garden with its wealth of rarities was inspected. There was a striking cobalt-blue flowered Hydrangea. At Derrynane *Simethis* was seen in good fruit, but no *Arabis ciliata*, nor could we find *Spiranthes* at Berehaven, though two expeditions were made, one by a motor boat from Glengariff. The tedium of the long journey was broken by our running into a shoal of mackerel, when 15 were pulled out on an extemporised line in as many minutes, exhibiting all the colours of opals as they died. From Glengariff we went on to Macroom and Cork, being nearly killed by a car-load of boisterous priests, who dashed round a corner on the wrong side of the road. When they heard the crash they rushed headlong on their wild career—to perdition would be their due. The Gougamebarry Pass would well repay working. From Cork, Blarney was visited, then we journeyed by Middleton and Castle Martyr, where *Hypericum hircinum* is completely naturalised, to Dungarvan, Waterford, Glenmore, New Ross and Wexford to Rosslare. Here *Sisyrinchium californicum* was abundant and spreading. The coast round Lady's Island Lake and Carnsore Point was worked and *Diotis* we found was still plentiful, although less so than 30 years ago. A new British variety of *Oenanthe Lachenalii* was found by Lady's Island Lake, where *Rumex maritimus* still grows. *Ruppia maritima (spiralis)* was abundant, entangled with *Zannichellia.* From Wexford we went northwards by Arklow, Glendalough, where we saw *Viola epipsila*, and Avoca to Dublin.

At the end of August, North Lincoln was visited and among the plants seen with the Rev. W. W. Mason were *Hedera Helix*, var. *borealis*, and *Cystopteris Filix-fragilis*. In September one was glad to see a few plants of *Stachys germanica* in Oxfordshire, and near Foxhall, in Northamptonshire, *Tilia cordata*, *Carpinus*, *Rosa omissa* and *Crataegus monogyna*, var. *splendens*. On the 8th I motored through Marlborough, Salisbury and Shaftesbury to Child Okeford, where I found *Potamogeton Drucei* was in excellent fruit, but there was no sign of either *alpinus* or *gramineus*. Then we went by Wimborne to Corfe Castle for the *Satureia*, and to Binden for *Potamogeton upsaliensis*. On the 15th Sir Roger Curtis motored me from Birmingham to Matlock, thence to the moors in search of some strange plants reported by school children as being native and far from houses. As a matter of fact, on the moors, we found seedling *Rhododendron ponticum*, the seeds of which must have come from a considerable distance. The second locality proved to be part of the Darleydale nursery on the moors, which had been neglected and overgrown. *Gaultheria* had spread itself thence over the moor, but the planted rows of the Ericaceae ought to have been noticed by the recorders, as this was an evident proof that the plants were not wild. Rows of *Erica mediterranea*, *Rhododendron ferrugineum*, *Azalea*, *Pernettya* and *Kalmia*, among others, were noticed. We returned by Blore and Ashbourne to see the beautiful rose found there two years ago. Prof. Boulenger refers it to *R. Afzeliana*. In October Miss Salmon and the Hon. Mrs Baring showed me *Rumex palustris* at Lockerley and other casuals, including *Astragalus boeticus* and *Salix pruinosa*. On 17th of November, aided with full instructions and a map given me by Mr R. E. D. Baker, showing where he had gathered the *Scirpus*, we went up to Southport, and having the advantage of the company of Mr Holder and Mr Chapple, a search was made for *Scirpus americanus*. It was found in considerable plenty, looking quite indigenous, in one of the wet slacks, growing with *S. Tabernaemontani*. It is quite away from the place where aliens occur or rubbish is tipped. Conducted by Mr Holder, we saw *Lupinus arboreus*, the habitats of *Siegisbeckia* and *Corrigiola*, and other interesting plants. We just managed to catch the 3 p.m. train at Birkenhead, reaching Oxford that evening—a very pleasant finish to the year's collecting.

The publications of the year are reviewed in the subsequent pages. Among those specially interesting to Ecological Botany is Dr W. B. Turrill's intensive study of the Plant Life of the Balkan Peninsula, a work involving an immense amount of labour. *Nature*, *The Gardeners' Chronicle*, *The Journal of Botany*, *The Naturalist*, *The Irish Naturalist* and *The North Western Naturalist* are all flourishing. Mrs Dent had a very pleasant compliment paid her on November 14 when, through the efforts of Miss Bacon and other friends, a reception was given her in the Great Central Hotel. The Secretary had the privilege of presiding at the meeting afterwards and presenting to Lady Davy, on the part of the members, Fryer's "Potamogetons of the British Isles." He gave a brief address on the extinct plants of Britain and of those added during the past twenty years. Mr N. Sandwith (*Scorzonera*), Mr R.

Butcher (*Tillaea*) and Lady Davy (*Carex microglochin*), each of whom had added a plant to our flora, were present.

Our new members for 1928-29 include:—Miss M. E. Ackerley, Mr Leslie T. Adams, Dr P. Aellen, Lady Charles Bentinck (1929), Mr R. E. D. Baker, Mr W. W. Boucher, Mr J. R. Brunker, The Cambridge Botanic Department, Mr John Cator, M.P.; Mr H. W. Clear, Mrs J. S. Coleman, Capt. G. A. Cove, Mr W. B. Cranfield, F.R.H.S., F.L.S.; Sir Arthur Dorman, Bart., K.B.E.; Canon R. Fisher, Mr J. H. Gladstone (1929), Miss B. Gullick, The Marquis of Hartington, Mr I. Helsby, Master Guy Holland, Mr J. S. Holland, Mrs Carl Holmes, Lt.-Col. the Hon. Cuthbert James, M.P.; Miss Lane Fox, The Hon. Mrs Montagu, New York State College of Agriculture, Miss H. L. Overy (1929), Mr E. Payne, The Rt. Hon. Col. Sydney Peel, Mr Hugh Philips, Mr W. R. Price, Lady Rayleigh, Dr Karl Rechinger, Rev. S. O. Ridley, The Hon. Mr Justice Roche, Mr R. A. Slade, Mr W. G. Trower, Mrs Trevor Tylor, Mr R. B. Ullman, Lady Mary Ward, and Sir James Watt.

Among the losses to our ranks we deplore the deaths of Lord Lambourne, that genial, courtly and vivid flower lover; Mr James Sanderson, the Galashiels philanthropist; Mr J. H. Stephens, of Horsham; Mr Beatty of Yardley Gobion; the warm-hearted fern-lover, Sir T. Mansel Franklen; the Marquis of Lincolnshire; that eminent flower painter, Miss C. G. Trower; the historian of Ross-shire, Mr J. H. Dixon, formerly of Poolewe; the talented Pamela, Viscountess Grey of Fallodon; Mr L. A. N. Riley, the son of Mr Athelstone Riley, and Sir Arthur Shipley. Their places will be difficult to fill. Our loss, by the premature deaths of Dr Albert Thellung and Emeritus-Professor C. Lindman, is irreparable. Notices of them will be found in the obituary in the subsequent pages.

During the year H.M. The Queen has become a Patron of the Linnean Society. The New Year Honours include Baronies to Lt.-Col. G. A. Gibbs of Tyntesfield, and Sir Henry Lugard, formerly Governor-General of Nigeria. Our valued member, Sir Alfred Mond, was made Baron Melchett in the Birthday Honours, and Viscount Grey of Fallodon was elected to the Chancellorship of Oxford University.

The Royal Horticultural Society, whose new hall is a departure in style, has conferred its Victoria Medals on Mr F. R. R. Balfour, Dr O. Stapf, Mr P. D. Williams, and Mr J. G. Millais. It is especially pleasing to see that Dr Hugo de Vries has received from the Queen of Holland the Grand Cross of Orange of Nassau. Mr H. N. Ridley, C.M.G., F.R.S., had the Frank N. Meyer Medal presented to him on March 14 by the American Consul on behalf of the President, Dr Fairchil, of the American Genetics Association, to whom this award is entrusted by the United States Department of Agriculture. There is an appreciative note and portrait of him in *The Gardeners' Chronicle*, 331, 1928. In his early days he was an eager field-botanist in England and was the first to notice in Oxfordshire a large flowered *Viola*, which we now put under *V. variata*. He became Director of the Botanic Gardens of Singapore. I well remember the lunch he gave me there with its extraordinary variety of tropical fruits. It may be said that he has been credited with discovering about 4000 new species.

Congratulations are also offered to Dr R. A. Fleming and Mr H. S. Wellcome, who had the Hon. LL.D. of Edinburgh University conferred on them in 1928; to Prof. Dr Walter Stiles, of Reading University, on his election to the Royal Society; to Mr W. B. Turrill of the Herbarium at Kew on receiving his Doctorate from the University of London; to Mr Ronald D'Oyle Good on his appointment as Lecturer of Botany at the University College, Hull; to Miss Melville, sister of our member, for being a winner of the Bronze Medal in the Herbarium competition of the Pharmaceutical Society, 1928; and to Mr F. J. Hanbury on his winning the Orchis Challenge Cup at the Chelsea Show. We are especially glad to offer all best wishes to Mr and Mrs T. J. Foggitt (née Gertrude Bacon) on their recent marriage. The botanical presents were numerous, and a handsome wireless set was presented by the members of the Wild Flower Society.

The Ashmolean Natural History Society of Oxfordshire celebrated its centenary on July 6 and 7, 1928. Dr G. C. Druce was its President on this occasion, it being his fifth time of serving in that office. He gave a reception to Members and Delegates in the University Museum, when he showed about a hundred sheets of new species which he had discovered or named. Lady Davie's paintings of British plants were also shown, and among many other exhibits Bodley's Librarian showed a copy of How's "Phytologia Britannica," which had many notes of plants made by Elias Ashmole. The "Flora Graeca" and other rare botanical works were on view. An appreciation of Ashmole and the early workers of the Ashmolean Society was given by Falconer Madan, ex-librarian of Bodley. Excursions were made to Nuneham, by permission of Viscountess Harcourt, and to Kidlington. The dinner was given at Magdalen College, Dr G. C. Druce presiding. The toast of the Society was proposed by Prof. H. H. Turner, F.R.S., coupled with the name of Dr Druce, the founder of the Natural History Society, who had done so much for its success. The President, in responding, read a letter from the Chancellor of the University, Viscount Grey of Fallodon, regretting his unability to be present owing to its being the Balliol Gaudy. Dr Druce said that during his Treasurership they had given Christmas Lectures to over 30,000 people and had handed over £500 to local charities. Prof. E. B. Poulton proposed the toast of the Kindred Societies, which was responded to by Mr B. H. Soulsby. Dr T. V. Barker proposed Our Guests, which was responded to by the Vice-President of Magdalen College. The menu was adorned with a photograph of the nearly extinct *Orchis militaris*, taken from an Oxfordshire plant gathered by the President.

This year was remarkable for the very late flowering of the Ash and the profuse, although tardily produced, inflorescences of the Oak. Rarely has there been a finer display of the flowers of *Spiraea Ulmaria* and *Lythrum Salicaria*, both especially conspicuous in the bogs of Ireland. In England the Hawthorn bloom was capricious, some hedges flowering profusely, others very sparingly. The Dandelions offered a brilliant display in the Midlands.

We are greatly indebted to Dr S. H. Vines, F.R.S., the Rev. F. Bennett, Mr T. Gambier-Parry, Mr R. H. Corstorphine, Mr W. H. Pearsall, Dr Drabble, Mr J. Fraser, Rev. H. J. Riddelsdell, Mr W. Watson, Mr W. O. Howarth, Col. A. H. Wolley-Dod, Mr D. Lumb, Mr A. E. Wade, Mr A. Bennett, and Mr R. Butcher for literary and critical assistance.

To the authorities of the Royal Botanic Gardens at Kew and Edinburgh, and the Natural History Museum, Cromwell Road, we are also indebted for help. Among foreign botanists we are especially grateful to Dr Albert Thellung for naming the adventives, the last piece of work he did. Dr Probst has also very kindly helped in this. M. Patrice de Rienconrt de Longpré has kindly determined the Leguminosae, Dr K. Ronniger the Thymes, Dr Dahlstedt the Taraxaca, Dr E. Almquist the Shepherd's Purses, and Dr J. Murr and Dr P. Aellen the Chenopods. Dr R. Danser, Prof. C. H. Ostenfeld, and Prof. J. Holmboe have also placed us under great obligations.

PLANT NOTES, Etc,, for 1928.

(*Mostly New Plants to the British Isles or Notes on British Species inserted here for Convenience of Reference.*)

Abbreviations.—† before a name signifies the plant is not native; × = a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany*; *Bot. Abstr.* = *Botanical Abstracts*; *Gard. Chron.* = *Gardeners' Chronicle*; *Ir. Nat.* = *Irish Naturalist*; *Journ. Bot.* or *J. of B.* = *Journal of Botany*; *Nat.* = *The Naturalist*; *N.W. Nat.* = *North Western Naturalist*; *Ph. Journ.* = *Journal of the Pharmaceutical Society.*

17/1. **Berberis vulgaris** L. U.S. Department of Agriculture, Farmers' Bulletin, No. 1544. November 1927. This supplants Bulletin, No. 1058. In ten years, from 19th June 1925, the Black-stem rust is estimated to have destroyed 378,000,000 bushels of wheat in the principal wheat growing States of the Upper Mississsipi Valley, besides 100,000,000 bushels of oats and much barley and rye. It is outlawed in many States. A history of the pest is given. One bush may produce as many as 38 times the human population of the world (64,000,000,000). The Japanese congener, *B. Thunbergii* DC., is not a rust carrier. The surest way to eliminate the shrub is to apply common salt or kerosene. Twenty pounds of salt is enough for a clump of stems a foot across. One gallon of kerosene destroys it, but more slowly.

44/3. **Erophila Boerhaavii** (Van Hall) Dumortier, var. **Drucei** O. E. Schulz, nov. var. Scapi fructiferi, 3-5 cm. alti. Folia anguste spathulata, cum petiolo 5-15 mm. longo, integra. Sepala 1.5 mm. longa. Petala pro rata magna, 3-4 mm. longa. Holton Quarries [Ref. No. C.8]; Stanton St John; Banbury, Oxon; Sheepstead, Berkshire [Ref. No. O.3], May 1915. My note on O.3 made at this time was: "fruit large; petals twice as long or more than twice as long as sepals."—G. C. Druce.

Var. **oxoniensis** O. E. Schulz, nov. var. Folia elongata, cum petiolo 1.5-2.8 cm. longa, anguste spathulata, utrinque 1 denticulata, supra medium 4-6 mm. lata, sensim in petiolum angustata. Marston, 1894; Binsey, Oxon, 1894, G. C. Druce, as *spathulata*.

Var. **macrophylla** O. E. Schulz, nov. var. Folia insigniter magna lataque, cum petiolo 1-2.5 cm. longa, obovata, utrinque 1-2 denticulata, supra medium 4-10 mm. lata, subito in petiolum contracta. Croydon, Surrey, A. BENNETT; Binsey, Holton Quarries, Oxon, 1894, G. C. DRUCE.

In next *Report* it is hoped to give an account of the Monograph by Prof. O. E. Schulz.

47/2. HESPERIS MATRONALIS L. A fasciated example occurred at Oxford in which the very much flattened stem was 130 mm. in circumference. Some dozens of sessile flowers sprang from the apex. G. C. DRUCE.

49/8. SISYMBRIUM ALLIARIA Scop., forma vel lusus LACERATUM. This singular plant was found by Mr V. E. MURRAY growing amongst the type at Shobdon, Herefordshire, on May 11, 1928. The leaf shape is remarkable as the margins are deeply cut, some of the teeth being 1.25 mm. long with broadly open sinuses. The apex is elongate, about 4 cm. long, the leaf itself measuring 9 cm. The outline recalls that of *Chenopodium hybridum*. The flowers are normal. Only a solitary plant was seen. G. C. DRUCE.

52/29. BURSA (CAPSELLA) RUBELLA (Reut.). See *Rep. B.E.C.*, 185, 200, fig. c., 1920. This species has a wide southern range along the Mediterranean, ascending, as a variety, in the Pyrenees. It extends into Asia Minor and Palestine, and is plentiful and widely distributed in Cyprus. As an adventive it occurs in Switzerland and the Tyrol, S. America and Australia. It is often suffused with a reddish tint. The sepals are glabrous, washed with purple. The short petals are scarcely longer than the sepals. The silicules are much narrowed at the base, more or less concave, the notch large, with the lobes of the wings divergent and rounded. Rouy says it is found here and there in France and is common in Corsica. *B. rubella* hybridises with forms of *B. pastoris* and one or more of these is often called *B. gracilis*. Although *rubella* had been reported as British I lacked definite material and information. Two years ago, in the Dropmore Garden in Buckinghamshire, I found specimens which I hoped might be this, and this year others were found on waste ground near Guildford, Surrey, which Dr Almquist has named *rubella* without any qualification. Their indigenity may be open to doubt. *B. rubella* was intentionally omitted from our *List* as uncertain; now it can claim a place there. G. C. DRUCE.

61/15. LEPIDIUM AFRICANUM (Burm. f.) DC., var. BURCHELLI Thell. This was one of the last plants determined by our valued helper before his prematurely sudden death. I gathered it on the corn refuse at Burton-on-Trent, Staffs, in July 1927. G. C. DRUCE.

63/3. BISCUTELLA CICHORIIFOLIA Loisel. Alien, Europe—Pyrenees to Herzegovina. Coup, Lanarkshire, R. GRIERSON.

76/3. RAPISTRUM RUGOSUM (L.) All., var. ERIOCARPUM (Webb. & Berthol.). Burton-on-Trent, Staffs, G. C. DRUCE and Sir ROGER CURTIS.

Det. by Dr PROBST as *R. rugosum* (L.) All., sub-sp. *rugosum* Thell., sub-var. *eriocarpon* Webb. & Berthol.

88/3 d. VIOLA ARENICOLA Chabert in Bull. Bot. Soc. Fr., xviii., 197, 1871. Salmonby, N. Lincoln, Rev. W. W. MASON, teste Mrs GREGORY, from whose work on *British Violets*, p. 42, we extract the following description:—" Cette espèce diffère donc du *V. silvestris* Lamk. (Koch, Syn., ed. 2, p. 91, etc.) et par conséquent des deux formes distinguées par M. Jordan (*V. Riviniana* Rchb. et *V. Reichenbachiana* Jord.) (1):—par sa racine *pivotante* produisant une ou plusieurs souches épaisses et *longuement écailleuses* sur une longeur de 1-5 cm. par les débris persistants des pétioles des anciennes feuilles. (2):—par la *persistance* pendant et après la floraison de la rosette formée par les feuilles radicales, tandis que dans les diverses formes du *V. silvestris*, la rosette se détruit ordinairement pendant la floraison et est remplacée bien plus tard par des nouvelles feuilles. (3):—par la *petitesse* constante de sa taille, de ses fleurs et de ses feuilles, ses tiges non rameuses et hautes de 2-6 (rarement 8) cm. (4):—par ses feuilles *obtuses*, glabres, d'un vert sombre en dessus, d'un vert rougeâtre ou lie de vin et fortement vienées en dessous, par les nervures rougeâtres. (5):—par les stipules inférieures incisées-dentées et non ciliées-fimbriées, et surtout par les *supérieures entières égalant le petiole* ou plus longues. (6):—par le pétale inférieur échancré. (7):—par le port et l'aspect sombre et noirâtre de la plante vivante. . . . Le *V. arenicola* a plus de rapport avec le *V. arenaria* DC. pour lequel il a été pris par plusieurs botanistes parisiens et avec le *V. rupestris* Schm. Semblable à eux par ses feuilles et son faciès on l'en distingue facilement par sa souche allongée, écailleuse, par ses sépales lancéolés-linéaires et non pas oblongs-lancéolés ou ovales-lancéolés, par la forme et la longueur relative de ses stipules, etc. . . ."

100/8. CERASTIUM SEMIDECANDRUM × VULGATUM = × C. OXONIENSE Dr. in Fl. Oxf., 72, 1928. Headington Quarries, Stow Wood, Oxon, G. C. DRUCE.

102/4. ARENARIA GOTHICA Fr. That there is a close relationship between *Arenaria gothica* and *norvegica* is generally admitted. This year Sir Maurice Abbot-Anderson gathered in Ribblesdale plants of *gothica* with the stem much branched, leaves obovate not ciliate, fleshy, capsule not constricted at top, teeth erect—characters which are very close to *norvegica*. These plants need further study and careful comparison.

107/2. PORTULACA GRANDIFLORA Hook. Bot. Mag., t. 2885. Alien. Brazil. Hortal. Dagenham, S. Essex, R. MELVILLE.

127/1. GERANIUM LANCASTRIENSE Mill. W. H. STANSFELD (*Gard. Chron.* ii., 208, 1928) says that for 50 years he had this growing in peaty soil at Inchfort Kew Nurseries. After 40 years the entire stock began to revert to type. He never succeeded in raising seedlings.

127/28. G. RUTHENICUM Uechtr. Alien, E. Europe. To this, rather than to *G. sibiricum* (*Rep. B.E.C.*, 448, 1927) Dr THELLUNG refers the Dagenham plants gathered by R. MELVILLE and myself last year, on the dumps on the Essex side of the Thames. G. C. DRUCE.

132/10. OXALIS INCARNATA L. Alien, S. Africa. Hortal. Guernsey, 1928, Mrs MCCRAE.

132/11. O. TETRAPHYLLA Cav. Alien, Mexico. La Haule, Jersey, Bro. LOUIS ARSENE.

136/1. ILEX AQUIFOLIUM L., nov. var. LUTESCENS Dr. This curious form of the Holly was gathered by P. B. O'KELLY at Newtown, Co. Clare, in March 1928. It differs from the type in having the foliage, the twigs and the bark of a palish yellow colour. It grew wild in a pasture field and seemed quite healthy and not a chlorotic state. G. C. DRUCE.

145/1(2). LUPINUS ARBOREUS L. Alien, N. America. Hortal. Now quite established at Freshfield, S. Lancs, G. C. DRUCE and F. W. HOLDER.

153/1. MEDICAGO FALCATA L., var. PUBESCENS (Rouy Fl. Fr., v., 11, as sub-var.) comb. nov. Dagenham, S. Essex, J. COOPER, ex G. C. BROWN. Det., as sub-var. *pseudo-prostrata* Hausm. for the Barry plant, P. DE RIENCOURT. This differs from type *Falcata* in having pubescent legumes.

Var. MINOR Gaud. Fl. Helv., iv., 611, 1829. Barry Dock, Glamorgan, R. L. SMITH; Slough, Bucks, J. A. WILLIAMS. Det. P. DE RIENCOURT. This is near to, if not identical with, Van Hayek's *tenuifoliata*. Gaudin (*l.c.*) briefly describes his *minor* as having "leguminibus falcatis, antrorsum semel contortis."

153/4. M. HISPIDA Gaertn., var. TUBERCULATA (Rouy non Willd.) comb. nov. Ware, Herts, G. C. DRUCE. Det. by P. DE RIENCOURT as *M. polymorpha* Willd., var. *tuberculata* (G. et G.). Rouy (*Fl. Fr.*, v., 36, 1899) describes it " Epines du légume réduites à des tubercules obtus; pédoncule 3-8 flore."

153/7. M. LUPULINA L., var. INTEGRISTIPULA (Rouy Fl. Fr., v., 9, as sub-var.) comb. nov. *M. Willdenowii* Mérat non Boenningh. Sand dunes, Kenfig, Glamorgan, G. C. DRUCE. Det. P. DE RIENCOURT. It is defined by Rouy as having the stipules entire.

Forma UMBELLATA mihi. Spikelets umbellate, pods glabrate. Sent from Port Henderson, Cornwall, by E. THURSTON. G. C. DRUCE.

154/4. MELILOTUS INDICA All., var. LAXIFLORUS Rouy Fl. Fr., v. 55, 1899. Alien. Ware, Herts; Burton-on-Trent, Staffs, G. C. DRUCE. Det. P. DE RIENCOURT. This is a larger plant than the type with laxer inflorescence, smaller and paler flowers, and smaller pods.

154/10. M. MACRORHIZUS Pers. Silloth, Cumberland, 1921, G. C. DRUCE. Det. P. DE RIENCOURT. Rouy (*Fl. Fr.* v., 54) says it differs from *altissima* in " les proportions moins élevées; les feuilles plus étroites, les supérieures moins dentées; les grappes florifères non chevelues au sommet; les dents du calice dressées, appliquées sur le légume, toutes sensiblement plus courtes que le tube; les légumes presque toujours monospermes, à carène un peu gibbeuse."

155/1. TRIFOLIUM MEDIUM L., var. INGLESIDE J. G. White, who "found it growing wild." See *Journ. Hort. Soc.*, lxxxix.

155/2. T. PRATENSE L., var. MICROPHYLLUM (Desv.) Lej. & Court. Comp. Fl. Belg., ii., 316. Stratford-on-Avon, Warwickshire, June 1901, Rev. W. W. MASON. Det. P. DE RIENCOURT. Rouy (*Fl. Fr.*, v., 120. 1899) thus describes it. " Pl. de 1-3 décimètres; tiges grêles, ascendantes, non fistuleuses, velues supérieurement, folioles au moins une fois plus petites, obovales; capitules plus petits, moins florifères; calice poilu; corolle rose ou purpurine."

155/2. T. PRATENSE L., approaching BORDERI Kerner ined. See Bordère *Pl. Pyr. Exsicc.* On the shell-sand dunes of Husinish, N. Harris, July 1928. Det. P. DE RIENCOURT. This plant has narrower leaflets and large, brilliant crimson flowers. It also occurs in Zetland. See Rouy *Fl. Fr.*, v., 122, 1899. G. C. DRUCE.

155/7. T. ARVENSE L., var. AGRESTINUM (Jord. in Bor. Fl. Centr., ed. 3, 153). *T. arvense* L. Mantissa ii., 453, sens. strict. St David's, Pembroke; Tunstall, Suffolk, Rev. W. W. MASON; Shoreham shingle, Sussex, with very pale corollas, G. C. DRUCE. Det. P. DE RIENCOURT. This has larger flowers than the other splits of *arvense*. It is a rather common British plant.

155/8. T. MARITIMUM Huds., var. BASTARDIANUM Ser. in DC. Prod. ii., 192, teste P. DE RIENCOURT. Tips near Glasgow, Lanark, R. GRIERSON. A feeble variety.

155/11. T. STRIATUM L., var. ELONGATUM Lojac. Tent. Mon. Trifogli Sic., 124, 1878. *T. tenuiflorum* Tenore in Hb. Kent's Bank, Lancashire, Rev. W. W. MASON. Det. P. DE RIENCOURT. This seems synonymous with var. *erectum* Gasp. in Leighton's *Flora of Shropshire*, 364, 1841, which clearly has precedence.

160/5. LOTUS CORNICULATUS L., nov. var. SCANDALIDIOIDES P. de Riencourt ined. This very handsome plant, with glaucous leaflets and conspicuous deep yellow flowers, grew on the sand-dunes at Husinish, N. Harris, and at Spiggie in Zetland. See *Fl. Zetl.*, 27, 1922, where I named it forma *grandiflora*. G. C. DRUCE.

Var. PEDUNCULATUS Cav. Ic. ii., 252, t. 164. *L. decumbens* Forst. Fl. Tonb., 86, et Sm. Eng. Fl. iii., 324, et E. B., t. 2615, non Pourret. Alcester, Warwick, G. C. DRUCE. Det. by P. DE RIENCOURT as the subvar. *parvifolius* Rouy Fl. Fr., 149, 1899.

176/2. VICIA TENUIFOLIA Roth, var. STENOPHYLLA Boiss. Fl. Orient. ii., 586. Alien. Swaythling, S. Hants, J. RAYNER. " Folioles allongées, assez étroitement linéaires; fleurs grandes (15-16 mm. de large), en grappes lâches." Rouy, *Fl. Fr.* v., 236, 1899. Det. P. DE RIENCOURT.

176/3. V. CRACCA L., var. IMBRICATA Gilib. Fl. Lith. iv., 104, subvar. LATIFOLIA Neilr. Fl. N.-Oesterr. 959. Det. P. DE RIENCOURT as *V. imbricata*, var. *latifolia*, mod. *incana* Peterm. Rodol. S. and Husinish, N. Harris, a beautiful dark-flowered plant, G. C. DRUCE.

176/6. V. DASYCARPA Tenore, var. LATIFOLIA (Rouy Fl. Fr., 238, 1899, as a var. of form *dasycarpa* Rouy) comb. nov. Det., as var. *latifolia*, by P. DE RIENCOURT. Hoddesdon, Herts, J. E. LITTLE. Wrongly named *V. Spruneri* in *Rep. B.E.C.*, 337, 1915, by the referee. Also from Hackney, Middlesex, R. MELVILLE, and Burton-on-Trent, Staffs, G. C. DRUCE.

Var. ANGUSTIFOLIA (Desf. Pl. d'Anj. non Roth). *V. polyphylla* Reichb. Fl. Excurs. and Koch in Bot. Zeit. xiii., 114, non Desf. *V. villosa*, var. *glabrescens* Koch Syn. ed. 2, 214, p.p. Godr. Fl. Lorr. ed. 1, vol. 1, 176. Neilr. Fl. N.-Oesterr., 960. Burton-on-Trent, Staffs; Ware, Herts, G. C. DRUCE. Det., as var. *angustifolia*, by P. DE RIENCOURT.

176/7. V. BITHYNICA L., var. SESSILIFLORA Seringe in DC. Prod. ii., 374. Adventive. Distinguished from the type by " pédoncules très courts, presque nuls." Ware, Herts, G. C. DRUCE. Det. P. DE RIENCOURT.

176/9. V. LUTEA L., var. VIOLASCENS Rouy Fl. Fr., 219, 1899. Alien. Corolla deep violet. Burton-on-Trent, Staffs, G. C. DRUCE. Det. P. DE RIENCOURT.

Modif. ERECTA Rienc. occurred at Shoreham, Sussex, in some quantity. It is distributed this year. G. C. DRUCE.

176/12. V. SATIVA L., var. MACROCARPA Moris. Fl. Sardoa i., 554. " Folioles grandes, obovées ou largement oblongues, tronquées ou rétusés, émarginées ou mucronées; fleurs grandes (2½-3 cm. de long); légumes de 50-60 mm. de long sur 8-10 de large, ordinairement plus ou moins, bruns à la maturité; graines grosses." Rouy *Fl. Fr.* v., 210, 1899. Hambleden, Bucks, G. C. DRUCE. Det. P. DE RIENCOURT.

176/13. V. ANGUSTIFOLIA Reichardt, var. ARENIVAGA Lam. Fl. Plat. Centr., 214. Differs from the type in " feuilles supérieures (et parfois les moyennes) à folioles très étroites, tronquées ou subattenuées au sommet, mucronulées; corolle petite (12-13 mm. de long), pâle; légumes un peu plus large que dans le type et var. *uncinata*." Rouy *Fl. Fr.*, 213, 1899, as var. *parviflora*. Burton-on-Trent, Staffs, G. C. DRUCE; Halton Holgate, Lincoln, Rev. W. W. MASON; Blackhead, Co. Clare, G. C. DRUCE.

178/2. LATHYRUS SYLVESTRIS L., var. OBLONGUS Seringe. Brundall, Suffolk, Rev. W. W. MASON; Ware, Herts, G. C. DRUCE. Det. P. DE RIENCOURT.

178/5. L. PALUSTRIS L., var. LINEARIFOLIUS Seringe in DC. Prod. ii., 371. *L. viciaeformis* Wallr. Sched. Crit., 388. "Folioles étroites lancéolées-linéaires, aigues," Rouy *Fl. Fr.*, 267, 1899. Gloddaeth, Denbigh; Wicken Fen, Cambridge; Hoveton, Filby, Norfolk, G. C. DRUCE. Identified by P. DE RIENCOURT. The var. *glabra* Trautv. is our common British plant. A specimen from Rainworth has elliptic, obtuse, mucronate leaflets = var. *latifolius* Lambertye Cat. Pl. Marne, 53. A plant of var. *linearifolius* from the Murrough of Wicklow has a few hairs on the stem and leaflets. G. C. DRUCE.

178/6. L. PRATENSIS L., var. or sub-var. GRACILIS mihi. Rouy (*Fl. Fr.* v., 264) treats the type as having "légumes . . . glabres" with two sub-vars. *pubescens* (Beck.) and *velutinus* (DC.) differing in degrees of pubescence. Syme (*E. B.* iii., 104) says "pods when mature glabrous, or clothed with short, curled hairs without papillae at their base" and "clothed with short, curled white hairs when young . . . frequently becoming glabrous when ripe. Leaflets . . . ¾ to 1¾ in. long." Mrs Wedgwood directed my attention to a form which grew beside a hedge bordering an arable field on chalk soil near Lambridge Wood which had glabrescent pods and small, quite narrow leaves, ½-¾ inch long, with usually one pod on a long stalk. A somewhat similar form was sent me by the late Alfred Fryer from a railway-bank between Somersham and Ramsey, Hunts. and another from Acton, Middlesex, by A. Loydell, which is also one-flowered, with similarly small, narrow leaves and glabrescent pods even in the young state. I went to Lambridge and found that this small-leaved, more glabrescent plant was constant for some distance in Mrs Wedgwood's locality. G. C. DRUCE.

178/25. L. MONTANUS Bernh., var. OBTUSIFOLIUS Martrin-Donos Fl. Tarn., 186. The older name seems to be var. *pyrenaicus* (L.) comb. nov. Folioles plus larges, ovales, obtusées; stipules plus grandes. Long Sleddale, Westmorland, G. C. DRUCE. Det. P. DE RIENCOURT.

183/5. PRUNUS DOMESTICA × INSITITIA = × P. VAUGHANIANA. Cockcroft, Kelvedon, Essex, 1893, J. VAUGHAN. Mr Fraser agrees with me that this is the probable origin of this very large-flowered plant. Like *insititia* in its brown bark and short pubescence at the base of the peduncles, the flowers are 2.5 cm. across, the petals are blunt and very broadly oval, the anthers small, with little pollen. The young leaves are hairy and nearer *insititia*.

185/149. RUBUS DUMETORUM W. & N., var. FASCICULATUS (P. J. M.). The var. *fasciculatus* (P. J. M.) must be deleted—the plant representing it in our *List* needs another name as it is not Mueller's plant, teste W. WATSON. See *Journ. Bot.*, 170, 1928.

190/4. ALCHEMILLA MINOR Huds. Dr F. Jaquet remarks, "*A. minor* Huds. (*A. filicaulis* Bus. et auct. Helv.). Votre plante d'Angleterre est toutefois plus densement poilue et le pilosisme monte plus haut dans l'inflorescence. C'est peut-être cette différence qui a engagé Buser a appeler la plante Suisse *A. filicaulis* pour la différencier.

194/12. ROSA GLAUCA Vill., var. AFZELIANA (Fries). Hedges and rough pastures, Blore, N. Staffs. This very beautiful form of *R. glauca*, which has such showy fruits and in which the sepals are erect and persistent, was noticed there by Sir Roger Curtis and myself. In order to see if it were not a seasonal form the spot was again visited this year when we found it abundant. At a distance it suggests *R. villosa*. Professor G. Boulenger has identified it with *Afzeliana*. It may be added that the oldest name for *glauca* is *dumalis* Bechst., but one hesitated, probably wrongly, in adopting it in the *List* on account of the confusion it would create. My variety of *Kelleriana* (*oenensis* of Keller not of the earlier Kerner) should read *R. dumalis*, var. *Kelleriana* (Dr. under *glauca*) comb. nov. and under *R. dumalis* Bechst. should also come vars. *Reuteri* (Godet), var. *Crepiniana* (Déség.), var. *transiens* (Gren.), var. *intermedia* (Gren.), var. *myriodonta* (Christ), var. *adenophora* (Gren.), var. *stephanophora* (Gren.), var. *subcanina* (Hayek), var. *subcomplicata* (Hayek), var. *denticulata* (R. Keller) and the hybrid with *R. villosa* = *R. glaucoides* (W.-Dod). G. C. DRUCE.

194/12. R. GLAUCA Vill., var. PSEUDO-HABERIANA R. Keller. Bay of Creekland, Hoy, Orkney, H. H. JOHNSTON. This belongs to the group Subcanina, characterised by its biserrate leaves and hispid peduncles, teste R. KELLER. Strictly speaking this should be *R. dumalis* Bechst., var. *pseudo-Haberiana* (R. Kell.) since Bechstein's is an earlier name than *glauca* Vill. G. C. DRUCE.

195/5. PYRUS AUCUPARIA Ehrh., var. SUBSERRATA (Opiz) comb. nov. The leaf-margins are incise-dentate, the teeth being cuspidate. Found by Mrs WEDGWOOD at Bagshot, Surrey. The varietal character is particularly noticeable on the barren branches. G. C. DRUCE.

195/7. P. ARRANENSIS (Hedl.), Glen Catacol, Arran, is described by J. Fraser under *Sorbus arranensis* Hedl. in *Gard. Chron.*, 155, 1928. The lobes of the leaves are narrower and generally more narrowed to the point than in the Welsh *minima*.

199/20. SAXIFRAGA TRIDACTYLITES L., var. MINUTA Pollini. Var. *exilis* Pollini Fl. Veronensis ii., 31, which Rouy says is not *S. exilis* of Stephan. Pollini's description is "caule subunifloro, foliis alternis, lineari-lanceolatis, radicalibus in rosulam dispositis spathulatis." Rouy wrongly attributed the varietal name to Engler since Pollini (*l.c.*) reduces his *S. exilis* to the varietal grade. I have gathered this tiny plant on the rocks in Corsica, but have hesitated to refer to it the dwarfed mural specimens sometimes met with in England. Miss Larter has sent me from turf on the cliffs near Torquay specimens which she names *minuta* Poll., a name I cannot trace.

199/31. S. PELTATA Torrey. Alien, N. America. Hortal. Ilam, near the Dove, 1925, E. DRABBLE. Doubtless of garden origin. I had it sent me from that neighbourhood some years ago.

223. OENOTHERA, Mutants of. P. Hugo de Vries and Prof. Ruggles Gates. Zeitsch. Indukt Abstamm.-u-Vererbungslehre. 47-275-86, 1928. Seven primary mutants are described. All are trisomic. Three other trisomic mutants, arisen from *Lamarckiana*, are known. The well-known polyploid mutants with multiple sets (21-28) of chromosomes one of which is *semigigas* give rise to a number of secondary mutants. The paper is useful from its having a brief analysis of the different types of mutants in this plant. It is well illustrated by photographs.

223/2. O. LAMARCKIANA Ser. BRADLEY MOORE DAVIES (*Am. Phil. Proc.*, pp. 319-55, 66, 1927) argues that the above plant is identical with, and becomes a synonym with, *Oenanthe grandiflora* Solander. 1789, which was introduced into England in 1788 from Alabama. He states that the *Oenanthe Lamarckiana* of De Vries' classical studies is not identical with the plant of Lamarck's *grandiflora* which was not the *Oenanthe Lamarckiana* of Seringe, 1828. An examination of authentic specimens in the herbaria of the Musée d'Histoire Naturelle at Paris confirms him in this statement and leads him to believe that a wrong determination has been made by Dr Vries. He gives a history of *grandiflora* Solander, and the contrasting features of that plant with *Lamarckiana*. which are here reproduced : —

OE. GRANDIFLORA.	OE. LAMARCKIANA.
Flowering Shoots—Generally with numerous approximate branches.	Sparsely branched above or not at all.
Stems—Sparsely pubescent, green above, reddish below, papillae never red over green portions of the stem.	With heavy pilose and puberulent pubescence, long hairs from numerous red papillae over green portions of the stem.
Leaves of upper foliage—Smaller lanceolate, in some forms broad at base, distinctly petioled, plane, with less pubescence.	Larger, broader, short-petioled or almost sessile, the larger crinkled, with more evident pubescence.
Inflorescence — More open, narrower bracts.	Dense spike, flat topped, broader bracts.
Buds—Buds about 9 cm. long, long slender hypanthium, and slender cone.	Buds about 8 cm. long. Stronger hypanthium and much wider cone.
Sepals Glabrous or sparsely pilose.	With heavy pilose and puberulent pubescence.
Sepal Tips—8-10 mm. long, attenuate and with relatively little pubescence.	6-8 mm. long, thicker, and with a very heavy pilose pubescence.
Hypanthium—Of open flowers, 4-5 cm. long, with light, pilose and puberulent pubescence.	Of open flowers, 4 cm. or less, with heavy pilose and puberulent pubescence.
Ovary—Glabrous or almost glabrous.	Strongly pilose and puberulent.
Capsules—2.5-3 cm. long, glabrous.	2-2.5 cm. long, strongly pilose and puberulent.

It will be noted that the most striking differences between *grandiflora* and *Lamarckiana* likely to be shown by herbarium material are those of pubescence on stems, sepals, ovaries and capsules. In my expereince of many years with *grandiflora* and *Lamarckiana* I have found these characters of pubescence wholly stable and am confident that they may be relied upon to separate these species even when little other evidence is available. Next in importance to pubescence on herbarium material of these two species are such differences as the branching of the flowering shoots, the attachment and form of the leaves, the form of the buds, the form and length of the sepal tips and the length of the capsules. Sometimes certain of these characters are clearly shown, sometimes they are obscured by the drying of the specimen, but pubescence can almost always be determined however poorly the specimen may be preserved. For example, the type specimen of *Oenothera grandiflora* in the Herbarium of the British Museum is so much mutilated that few of its characters are clearly shown, but of these the pubescence is unmistakably that of *grandiflora*. It is to me most surprising that Professor de Vries should so completely ignore the evidence from pubescence which stands out so clearly.

255/2. Pimpinella Saxifraga L., var. ovata Sprengel Species Umbellif., 1818. Near Charlestown, St Austell, Cornwall, 1927, W. Tresidder. Determined by Dr Thellung as the sub-var. *pubescens* Mert. & Koch. This is a robust plant which I should have put under *poteriifolia* Koch but for its larger, more deeply cut, and more ovate leaflets which led me to refer it to our lamented friend whose erudite work on the Umbelliferae of Central Europe has already been noticed in these pages.

314/1. Bellis perennis L. A teratological condition of this plant was sent by Mr Arthur Turner from a field near Nelson, Lancashire, where it was found growing with the type. In this case the flowers are barren, being without stamen or stigma, and the ligules are very short and lacerated.

The Hen-and-Chicken variety was sent from Shurrery, Reay, Caithness, by Mr James Sutherland.

A discoid form, entirely destitute of the white ligules, was found at Melmerby, Cumberland, by Rev. W. W. Mason.

341/5. ×Xanthium italicum Moretti. Alien. Bristol, N. Somerset, N. & C. Sandwith. Possibly a hybrid with *orientale*.

341/1. Siegesbeckia L.

341 (1)/1. S. orientalis L. Alien. India and tropical and sub-tropical regions. Perhaps a cotton introduction. In some plenty by the railway fence near Freshfield railway station, S. Lancs. 1928. F. W. Holder & R. Wagstaffe. The genus was named after the German, Dr John George Siegesbeck. *S. orientalis* is occasionally cultivated so that the Lancashire specimens may be of hortal origin. The plants are rather weird in appearance, one or two feet high, with yellow florets. It was

figured in the *Botanical Register*, t. 1061. This January I saw it naturalised at Orotava, Teneriffe, G. C. DRUCE.

364/7. ANACYCLUS MEDIANS Murbeck. Isle of Wight, J. W. LONG and Dr E. DRABBLE.

370/17. CHRYSANTHEMUM CORONARIUM L., var. BICOLOR nov. var. Alien, S. Europe. Splott, Cardiff, 1927; Burton-on-Trent, Staffs, 1928, on refuse from the barley brought into the latter place for malting purposes. This variety differs from the type in having the upper part of the ligules white or very pale yellow. It is an analagous variety to the var. *discolor* Archangeli of the Sicilian *C. hybridum* Guss. G. C. DRUCE.

370/19. C. CARINATUM Schousboe Vext. Marokko, 198, t. 6. Alien, hortal. Waste ground, Southport, F. W. HOLDER. A beautiful white-flowered plant with a purple disk. Det. at Kew.

396/8. CIRSIUM ARVENSE Scop., var. PURPUREOCAULIS (Fraser). *Journ. Hort. Soc.* xcii., 1928.

401/2. SAUSSUREA DISCOLOR DC. Alien, Europe. St Budeaux, S. Devon, Miss E. H. AVIOLET in *Trans. Dev. Assoc.*, 90, 1928.

416/6 (2). CREPIS BULBOSA (L.) Tausch in Flora xi., 78, 1828. *Leontodon bulbosum* L. *Aetheorhiza bulbosa* Cass. *Prenanthes bulbosa* DC. *Hieracium bulbosum* Willd. *Taraxacum bulbosum* Reichb. *Intybus bulbosus* Fr. Distribution: France—Hyères; S. West Finistere, Italy, Sardinia, Istria, Dalmatia, Greece, Turkey, Cyprus, Syria, N. Africa—from Egypt to Marocco. The plant is stoloniferous with a fibrous rhizome with long fibres ending in a whitish, roundish tuber. Stem 1-4 dem., one to four-headed, naked or with one or two leaves, glandular and with black lines near the tip. Leaves glabrous, pale green, oblong-lanceolate, dentate, narrowed at the base and almost all basilar. Flower-heads large, terminal. The phyllaries flat, the inner broadly linear, obtuse, the border undulate, scarious; the outer short, narrower, all eventually reflexed. Corolla yellow. It likes dampish sand-dunes, not necessarily close to the sea, but is also found in olive woods and rocky places by the sea. It is not likely to be confused with any British species. As the numerous synonyms suggest it is somewhat anomalous but it comes under the section *Crepis* not *Barkhausia*. Specimens were sent to Kew from Anglesey by Mrs EDITH M. MASSEY in October 1926. Mr A. R. Horwood thought that there was a chance of their being native. It is true that the plant distribution in that island is somewhat eccentric, since *Helianthemum Breweri*, *Juncus capitatus*, *Mibora*, *Potamogeton rutilus*, *Senecio spathulifolius*, var. *maritimus* are represented there, and one must await the results of further search which may trace it to a less suspected habitat. Had it been in Penrhos to which the late Lady Stanley of Alderley brought immense quantities of Cyclamens from Sorrento, an explanation might have been forthcoming.

419/140 (2). HIERACIUM HOLOPLEURUM Dahlst. Native. Hoy, Orkney, 1927, H. H. JOHNSTON. It also occurs in the Faroes and Iceland. It belongs to the Vulgata section.

419/241f. H. UMBELLATUM Fr., var. CHLOROMELANUM Dahlst. Native. By the Carrick River, Donegal. This handsome form of *umbellatum* struck me as being similar to one I had gathered in Norway. Its clear foliage and large and numerous flowers make it a very handsome plant. Dr Zahn gives me the name and says it also occurs in Scotland.

422/2. LEONTODON AUTUMNALIS L., var. SORDIDA Bab. Houbie, Fetlar, Zetland (R.N.291), August 1928, H. H. JOHNSTON; Tarbet, N. Harris; Dunvegan, Skye; Frilford, Berks; Hanslope, Bucks; Chatteris, Cambridge; Balta, Unst, G. C. DRUCE.

423/1(2). TARAXACUM ARGUTUM Dahlst., nova sp. *Folia* sat obscure viridia, glabra vel in nervo dorsali ± pilosa, linearia—lineari-lanceolata, longa, multilobata, lobis sat angustis deltoideis, dorso subrecto vel convexulo in foliis inferioribus, ± subulatae dentato in foliis superioribus, ± integro apicibus sat longis retroversis—sat patentibus, acutis—acutiusculis, ± distantibus, interlobiis ± subulate dentatis, saepe ± angustis et obscure coloratis, lobo terminali triangulari-hastato—sagittato mediori acuto, lobis lateralibus patentibus—retroversis acutis, petiolis et nervo mediano leviter violascentibus. *Scapi* quam folia breviores glabri vel apicem versus, ± araneosi, ± colorati. *Involucrum* parvum breve, obscure viride—sat atroviride, basi ± rotundata. *Squamae* ceteriores ± erecto-patentes vel subrecurvatae, ± ovato-lanceolatae, superiores ± lanceolatae apici ± coloratae, vix marginatae. *Calathium* parvum, ligulis brevibus, involutis marginalibus, extus ± brunneo-purpurae. *Antherae* polline carentes cum stylis et stigmatibus inclusiae. *Achenium* rufescens, apice acute spinulosum, caeterum laeve, c. 3 mm. longum in pyramidum ad 1 mm. longum cylindricum abiens. This species is very nearly related to *T. brachyglossum* Dahlst., but seems to differ from it through the darker green, regularly lobed leaves, the somewhat greater heads and darker green, not violet-coloured, outer phyllaries. The ligules seem to be more involute than in *T. brachyglossum*, and the anthers and styles are entirely included within the ligules. Heath, Beds. 1928, G. C. DRUCE.

423/2(2). T. HELVICARPUM Dahlst., nova sp. *Folia* sat obscure viridia, glabra, lanceolata—ligulata, exteriora lobis acutis, ± patentibus, ± angustis, deltoideis, interlobiis ± dentatis, brevibus, lobo terminali parvo, hastato, acutiusculo, interiora ± lingulata, lobis ± deltoideis, brevibus, apicem versus accrescentibus, lobo terminali sat lato ovato-hastato, plerumque integro, marginibus convexis acutiusculo—obtusiusculo, petiolis angustis et nervo dorsali viride-violascentibus. *Scapi* quam folia longiores, ± violascentes. *Involucrum* parvum, olivaceo-viride. *Squamae* exteriores erecto-patentes, ± late lanceolatae—ovato-lanceolatae, ± marginatae, saepe ± violascentes. *Calathium* parvum. *Ligulae* sat obscure luteae, marginales extus stria purpureo-violacea notatae.

Antherae pollini carentes. *Styli* et stigmata ± fusco-virescentes. *Achenium* pallide fulvum, c. 3.5 mm. longum, 1 mm. latum, apice ± acute, spinulosum, caeterum ± tuberculatum, sat abrupte in pyramiden, c. 1 mm. longum, cylindricum abiens. This species has a great resemblance to *T. decipiens* Raunk. in its leaves and outer phyllaries, but differs from it in its fawn-coloured fruits. Marlborough, Mrs Wedgwood; Mundham, E. Norfolk, G. C. Druce.

423/5(2). T. GLAUCINIFORME Dahlst., nova sp. *Folia* glabra, laete viridia, subglaucescentia, longa linearia—lineari-lanceolata, multilobata, lobis approximatis, ± deltoideis in margine superiore (saepe ± convexo), ± longe subulato-dentata, apicibus angustis, longis, acutis, saepius ± patentibus, lobo terminali ± hastato—hastato-triangulari, lobulis lateralibus sat brevibus acutis, lobo apicali saepius elongato, ± integro vel etiam ± dentato, ± lingulato obtuso—subacuto, petiolis levissime coloratis—sat pallidis, nervo mediano pallido vel inferne levissime colorato. *Scapi* quam folia plerumque breviores, pallidi vel parum colorati, glabri vel superne ± araneosi. *Involucrum* sat obscure viride, ± pruinosum, basi ± ovata. *Squamae* exteriores anguste ovatae—ovato-lanceolatae, ± albido-marginatae, subadpressae vel erecto-patentes, ± acuminatae, infra apicem breve et obscure callosae vel ecallosae, interiores ± lineares, infra apicem callis brevibus, obscuris praeditae. *Calathium* parvum, 25-30 mm. diametro. *Ligulae* sat laete luteae, marginales extus vitta rubro-purpurea natatae. *Antherae* polline carentes. *Stylus* subluteus stigmatibus ± fuscovirescentibus. *Achenium* rubiginosum, apice breve et late, spinulosum, caeterum crebre tuberculatum vel ima basi laeve, 2.5 mm. longum vix 1 mm. latum, pyramide, 0.75 mm. longa, conico-cylindrica, rostro c. 8 mm. longo. *T. glauciniforme* is very nearly allied to the Scandinavian *T. glaucinum* from which it differs through its narrower, many lobed leaves with shorter and nearly uniform lobes, smaller heads with only indicated protuberances on the inner phyllaries, and somewhat darker coloured fruits, with shorter beak. First found, Heath, Beds, and Brickhill, Bucks, G. C. Druce.

423/15(2). T. ACIDODONTUM Dahlst., nova sp. *Folia* saturate viridia, subtus pallidiora, in pagina superiore obscure purpureo—maculata, elongate lanceolata—oblongo-lanceolata, multilobata, lobis approximatis latis et saepe longis, deltoideis, superioribus saepe longis acutis ± recurvatis praeditis, omnibus in margine superiore acute et crebre, saepe longe subulato—dentatis, lobo terminali hastato integro acuminato, petiolis et nervo mediano ± violascentibus. *Scapi* plures folia aequantes vel ea superantes, ± colorati. *Involucrum* mediocre obscure olivaceo—virescens. *Squamae* exteriores ± recurvatae, breves, anguste ovato-lanceolatae—lanceolatae, parum marginatae, interiores late lineares apice ± purpurascentes. *Calathium* c. 4 cm. diametro. *Ligulae* laete luteae, marginales extus stria badio—violacea notatae. *Antherae* polliniferae. *Stylus* et stigmata ± fusco-virescentes. *Achenium* (dilute) badium, 3.5 mm. longum, 1 mm. latum, pyramide conica, 0.75 mm. longa sensim in achenium obesente, superne breve spinuloso-tuberculatum cae-

terum laeve. This species belongs to Spectabilia, and its closest ally is *T. naevosiforme* Dahlst., from which it differs through its strongly and acutely dentated leaves and smaller heads and fruits. Stromness, Orkney, H. H. JOHNSTON.

423/15(3). T. ACRIFOLIUM Dahlst., nova sp. *Folia* obscure viridia, in pagina superiore ± atropurpureo—maculata, subtus pallidiora, elongata lanceolata—oblongo-linearia, distanter lobata, lobis latei, brevibus triangularibus—deltoideis apice brevi—sat elongato patentibus—hamato—recurvato, lobo terminali triangulari—sagittato, angusto—sat lato ± integro, elongato, acuto, petiolis pallide violaceis, nervo mediano obscurius violaceo. *Scapi* quum folia breviores glabri—subglabri. *Involucrum* mediocre sat obscure virescens, basi ± ovata. *Squamae* exteriores ± anguste lanceolatae, sat obscure atrovirides, subtus ± pruniosae, anguste marginatae, ± recurvatae, interiores lineares apice ± coloratae. *Calathium* 30-35 mm. diametro, ut videtur sat planum. *Ligulae* angustae luteae, marginales extus stria obscure badio—purpurea ornatae. *Antherae* polline carentes. *Stylus* et stigmata obscure luteae. *Achenium* ignotum. This species belongs to the same group as *T. naevosum* Dahlst., and *T. naevosiforme* Dahlst., namely, Spectabilia. From these it differs through its small growth, narrow leaves with elongated acute endlobes, and smaller heads. As regards the leaves and phyllaries, it is very like *T. adpressum* Dahlst., of the same group (from central Scandinavia), but it differs from it through the shorter lobed spotted leaves, the darker heads with less conspicuous marginated outer phyllaries, and the form and colour of the flowers, that fully agree with those of *T. naevosiforme* Dahlst. Brough Lodge, Fetlar, Shetland, June 30, 1927, H. H. JOHNSTON.

423/25(2). T. LANDMARKII Dahlst. Queenania, Stenness, Mainland, Orkney, June 3, 1927, H. H. JOHNSTON. Native. Common. Leaves dull green above, paler green beneath, not spotted, with a purplish-green midrib. Outer phyllaries recurved both in flower-bud and in flower; inner phyllaries adpressed, simple (not gibbous or appendaged) at the dark purple apex. Corolla yellow, striped purplish-brown beneath in the outer florets. Style and its two recoiled branches pale brownish-yellow.

Forma LATOLOBUM Dahlst., nova forma. Foliis intermediis et internis lobis latioribus deltoideis recurvis, lobo terminali ovato—hastato latiusculo integro a forma primaria praecipue differt.

This form seems to belong to *T. Landmarkii* Dahlst., as a lobed modification. Very similar specimens are gathered in Norway not far from the typical form. Taing Head, Cava, Orkney, H. H. JOHNSTON. Native. Rare. Plants in full flower and unripe fruit. Leaves dull green above, paler green beneath, not spotted, with a purplish-green midrib. Outer phyllaries recurved both in flower-bud and in flower; inner phyllaries adpressed, simple (not gibbous or appendaged) at the dark purple apex. Corolla yellow, striped purplish-brown beneath in the outer florets. Style and its two recoiled branches brownish-yellow.

423/34(2). T. STRICTOPHYLLUM Dahlst., var. IMMACULATUM Dahlst. A forma typica norvegica foliis immaculatis et lobis saepius retroversis vel recurvatis (praesertim in foliis exterioribus) satum differre videtur. Buan, Stromness, Mainland, Orkney, March 17, 1926; south-west end of the Holm of Grimbister, Orkney, July 7, 1927, H. H. JOHNSTON. Native, rare, plants in flower and unripe fruit, with ripe achenes all shed. Leaves dull green above, paler green beneath, not spotted, except in one plant in which the leaves were sparsely spotted dark purplish above; midrib purplish-green. Outer phyllaries recurved both in flower-bud and in flower; inner phyllaries adpressed, simple (not gibbous or appendaged) at the dark purple apex. Corolla yellow, striped dull brownish-purple beneath in the outer florets. Style and its two recoiled branches yellow. Fruit-receptacle flattish—convex.

423/36(2). T. ADSIMILE Dahlst., nova sp. *Folia* sat obscure sublutescenti-viridia, linearia—elongate-lanceolata, intermedia, lobis ± distantibus, sat longis deltoideis, ± reversis, integris, vel inferioribus parce denticulatis, ± acutis, interlobiis sat angustis, ± dentatis, plerumque ± atropurpureo-coloratis, lobo terminali ± sagittato, lobulis lateralibus mediocribus, retroversis—hamatis, margine superne ± convexis, lobato mediano angusto, brevi vel ± protracto, ± acutiusculo, interiora latiora, lobo terminali ovato, sagittato, sat lato obtusiusculo—obtuso, petiolis sat pallidis diluto violascentibus, nervo mediano praesertim inferne, ± violascente. *Scapi* plures, folia aequantes vel paullum superantes, pallido—leviter colorati, glabri, superne ± araneosi. *Involucrum* breve crassum, basi ovato-truncata. *Squamae* exteriores ± curvato-reflexi, anguste ovato-lanceolatae—lanceolatae, sat laete virides, saepe in utroque pagina ± purpureo-violascentes, emarginatae, ± acutae, interiores anguste sublineares, in apicem angustum obtusiusculum protractae. *Calathium* c. 40-45 mm. diametro, sat plenum. *Ligulae* sat obscure luteae, marginales extus stria cano-violacae notatae. *Antherae* polliniferae. *Stylus* et stigmata luteo-lutescentes. *Achenium* fusco-stramineum, c. 2.5 mm. longum, 0.75 mm. latum, superne breve spinulosum, caeterum ± tuberculatum, basi ± laeve in pyramiden brevissimum conicum, vix 0.25 mm. longum sensim abiens, rostro 8 mm. longo. This species is undoubtedly very nearly related to *T. longisquameum* Lindeb. f. It differs from it through more slender growth, narrower leaves with deltoid not uniform lobes, smaller heads and very small and darker coloured fruits. Didcot, Berks, 1928, G. C. DRUCE.

423/36(3). T. AEQUATUM Dahlst., nova sp. *Folia* sat laete viridia, glabra—subglabra, multilobata, angusti lineari—lanceolata-angusti lanceolata, lobis brevibus—sat longis, ± deltoideis, subhamatis sat approximatis, acutis, integris vel inferioribus praesertim ± denticulatis, acutis (vel summis singulis apice ± rotundato), margine superiore recto vel ± convexo superne, in interlobiis brevibus intergris abiente lobo terminali mediocri—parvo triangulari-hastato, integro, acuto-acuminato, folia inferiora lobo terminali magno sagittato—ovato-sagittato praedita,

petiolis et nervo dorsali pallidis vel levissime coloratis. *Scapi* quam folia longiores vel ea aequantes apice basique ± colorati. *Involucrum* mediocre sat magnum, ± atroviride, basi ± ovato-truncatae. *Squamae* exteriores ± ovato-lanceolatae, anguste lanceolatae, erecto patentes vel ± recurvae, sat longae, ± acutae, vix marginatae, ± atrovirides et ± violascentes. *Calathium* 45-56 mm. diametro subradians. *Ligulae* luteae marginales extus stria obscure cano-violacea notatae. *Antherae* polliniferae. *Stylus* et stigmata ± fusco-virescentes. *Achenium* ignotum. This species is very well distinguished through its long fairly pale green leaves with deltoid, sometimes unguiform, equal and mostly approximated lobes and through the triangular or sagittate acute or acuminate end lobe. The longer the lobes are the more they become unguiform. Sometimes the ends of some upper lobes grow obtusate. The species is not closely related to any Scandinavian form. Harwell, Berks; Shipton, Oxon, 1928, G. C. DRUCE.

423/36(4). T. ARDISODON Dahlst., nova sp. *Folia* gramineo-viridia in interlobiis praesertim in dentibus ± atropurpureo-colorata, glabra—subglabra, sat multilobata, exteriora lobiis ± deltoideis acutis in margine superiore aequeae in interlobiis subulate dentatis loboque terminali triangulari-hastato praedita, intermedia lobis deltoideis, ± longis acutis in margine superiore, acute-subulate et ± longe dentatis apicibus, ± longis, patentibus, porrigentibus interlobiis, longe et subulate dentatis, lobis summis deltoideis—hamatis ± integris, lobo terminali parvo sagittato—triangulari, ± mucronato integro, interiora lobis et in foliis intermediis in apicem longiorum foliatum—porregentum protractis praedita lobo terminali majore ovato-sagittato, inferne ± acuti et grosse dentato lobulato saepe parum a lobis proximis similato superne integro acutiusculo petiolis et nervo dorsali ± roseo-violascentibus. *Scapi* quam folia breviores apice basique ± colorati, glabri vel superne ± araneosi. *Involucrum* breve crassinsculum, ± atroviride, basi ± ovato-truncata. *Squamae* exteriores ± anguste ovato-lanceolatae, atrovirides, supra saepe ± violascentes, apice ± coloratae, ± recurvata—reflexa (superiores saepe ± erecto-patentes) vix vel parum marginatae. *Calathium* c. 45 mm. diametro, ± radians. *Ligulae* luteae extus stria brunneo-purpurea notatae. *Antherae* ± polliniferae. *Stylus* et stigmata obscure fusco-virescentes, sicci sat nigri. *Achenium* 3.5 mm. longum, c. 1 mm. latum, obscure fusco-stramineum, superne breve spinulosum ad medium, ± tuberculatum, caeterum laeve iis pyramidea ad 1 mm. longam cylindricum abiens. *T. ardisodon* possesses a very great resemblance to *T. polyodon* Dahlst., from Southern Sweden, but differs very well from it especially through its more narrow paler green leaves, with decided subulate dentated lobes and interlobes, smaller triangular or sagittate end lobes and shorter less reflexed outer phyllaries. Oxford, 1928, and a form allied to this, Albury, Herts, G. C. DRUCE.

423/42. T. ATROMARGINATUM Lindb. f. in Floestr. in Act. Soc. Faun. et Fl. Fennica, xxxix., 4, 36, 1914, nomen. A fine plant found in the

Oxford Parks Dr Dahlstedt says resembles the above but is probably a new allied species. G. C. DRUCE.

423/46(2). T. CAPHOCENTRUM Dahlst., nova sp. *Folia* sat laete viridia, glabra, subtus in nervo mediano ± pilosa, longa, exteriora elongate lanceolata, multilobata, lobis ± deltoideis, infimis apicibus longis, angustis acutis, superioribus latioribus summis, dorso ± convexo, omnibus apicibus ± longis acutis, ± patentibus, omnibus ± integris, lobo terminali parvo—mediocri, triangulari-sagittato in foliis intermediis, majore ± hastato, folia interiora vel omnia vel plurima latiora, ± obovato-lanceolata, lobis apicem versus magnitudine accrescentibus, lobis saepe subhamatis vel triangularibus, acutis interlobiis latis saepe sejunctis, lobo terminali magno lato et saepe sat longo sagittato, lobulis basilibus brevibus, acutis, marginibus ± convexis, integro obtusiusculo —obtuso vel etiam rotundato, petiolis sat angustis leviter violascentibus, nervo mediano pallido, inferne leviter violascente. *Scapi* folia aequantes vel superantes, apice basique ± colorati, superne praesertim ± araneoso-pilosi. *Involucrum* sat magnum, ± obscure olivaceo-viride, basi ± ovata. *Squamae* exteriores angusti ovato-lanceolatae—lanceolatae-acuminatae, acumine ± colorato, obscure virides, haud (vel levissime) marginatae. *Calathium* c. 45 mm. latum. *Ligulae* obscure luteae, marginales extus stria obscure fusco-purpurea natatate. *Antherae* polliniferae. *Stylus* et stigmata ± fusco-virescentes. *Achenium* obscure fusco-stramineum, apice acute, spinulosum caeterum tuberculatum vel laeve, 3.7 mm. longum in pyramiden brevissimum (usque ad 0.5 mm. longum) conicum sensim abiens. This species is distinguished by its many lobed, narrow outer leaves, with deltoid acute lobes and small triangular sagittate end lobe, and by its broad inner leaves with fewer lobes and large, entire, more or less blunt or rounded end lobes. These broad leaves seem often to be predominant at the flowering time. The species is not closely allied to any Scandinavian form. Didcot, Berks; modif., Oxford; Shipton, Oxon; Bracknell, Cothill, Kingston, Berks, G. C. DRUCE.

423/47. T. CHLOROLEUCUM Dahlst. A new form, allied to this Swedish plant, from the Oxford Parks, G. C. DRUCE.

423/54(2). T. DUPLIDENTIFRONS Dahlst., nova sp. *Folia* saturate viridia, immaculata, subtus pallidiora, glabra, lineari-lanceolata—oblongo-lingulata, lobis latis brevibus—mediocribus deltoideis, sat latis ± retroversis, acutis, ± approximatis, integris vel inferioribus subulato—dentatis praedita, lobo terminali parvo—mediocri sagittato—vel hastato—triangulari, lobatis lateralibus latis acutis plerumque brevibus, petiolis et nervo dorsali leviter coloratis. *Scapi* plures quum folia pauceo longiores vel ea aequantes, glabri, ± cupreo—colorati. *Involucrum* mediocre, crassiusculum, ± obscure olivaceo—viride. *Squamae* exterioribus recurvatae, ± anguste lanceolatae, leviter marginatae, interiores ± lineari—lanceolatae. *Calathium* c. 40-50 mm. diametro. *Ligulae* obscure luteae, marginales extus stria virescenti—brunnescens notatae.

Antherae polliniferae. *Stylus* et stigmata fusco-virescentes. *Achenium* angustum fusco—vel brunneo-stramineum, 3.5-3.7 mm. longum, vix 1 mm. latum superne acute et parce tenui—spinulosum, caeterum parce max. parce laeve vel brevissime et parce tuberculatum, pyramide tenui cylindrica c. 1 mm. longa. Rostrum 9-10 mm. longum. This species, which belongs to group Vulgaria, has, as to its habit and figure of the leaves, a very great resemblance to *T. duplidens* Lindb. fil., but differs from it through its recurved and less dentate leaves, broader outer phyllaries, and well-developed pollen. It cannot be regarded as nearly allied to this form. Bridge across the Oyce, Finstown-Rendall Public Road, Firth, Mainland, Orkney, November 3, 1927, H. H. JOHNSTON. Native. Common. Plants in flower and ripe and unripe fruit. In the living plant, the style and its two divergent branches are yellowish-brown. Fruit-receptacle flattish—convex.

423/56. T. EXPALLIDUM Dahlst. Probably a new form related to this species, Frilford, Berks, G. C. DRUCE.

423/62(2). T. HEMIPOLYODON Dahlst., nova sp. *Folia* saturate viridia, hinc inde secus nervum dorsalem et in interlobiis ± atropurpureo-maculatis, glabra—subglabra, longa et ± lata, ± approximata oblonga —elongate obovato-oblonga, multilobata, lobis longis patentibus summis, basi latiore inferioribus magis angustis omnibus in apicem, ± acutum sensim protractis in utroque margine, praesertim in lobis inferioribus, ± longe et subulate dentatis, dentibus saepe ± porrectis, lobo terminale brevi late triangulari, integro, ± acuto vel in foliis intermediis majore et ± dentato, saepe ± indeterminato, petiolis et nervo dorsali inferne laetius—obscurius roseo-violascentibus. *Scapi* plures, folia aequantes vel iis breviores apice basique ± colorati, glabri. *Involucrum* sat magnum, latum, atrovirens, basi ± truncata. *Squamae* exteriores ± late ovato-lanceolatae, emarginatae in pagina inferiore, ± atrovirides, in pagina superiore ± glaucovirides, subadpresse—erectopatentes, demum ± retroversae. *Calathium* 45-50 mm. latum, parum radians. *Ligulae* sat obscure luteae, marginales extus stria angusta obscure cano-violacea notatae. *Antherae* polliniferae. *Stylus* et stigmata ± fusco-virescentes, sicci sat nigrescentes. *Achenium* fusco-stramineum, 3.5 mm. longum, c. 1 mm. latum, apice breve et late spinulosum, caeterum tuberculatum et inferne, in pyramiden 0.75-1 mm. longum, late cylindricum, ± abrupte abiens. This species slightly resembles in its general appearance the Swedish *T. polyodon* Dahlst., and is probably allied to it, from which it differs through its longer and narrower, acute, toothed lobes, and shorter, not reflexed, outer phyllaries. It resembles also *T. ardisodon* but differs from it through its broader, darker green leaves and lobes that are less broad at the base and especially through the broad and short triangular end lobes and broader more upright and adpressed outer phyllaries. The Parks, Oxford; Didcot, Berks, G. C. DRUCE.

423/62(3). T. HAMIFERUM Dahlst., nova sp. *Folia* sat obscure viridia, ± glabra, exteriora et intermedia lobis (deltoideis vel plerumque)

summis praesertim ± hamatis, inferioribus minoribus, superioribus magnitudine accrescentibus, minus acutis, dorso ± convexo, integris, lobo terminali brevi, ± hastato, integro, acutiusculo—obtusiusculo, interiora lobis paucioribus, lobo terminali majore et latiore hastato, integro, praedita petiolis pallide violascentibus, nervo mediano inferiore parte excepta parum vel vix colorato. *Scapi* folia aequantes vel ± superantes, glabri vel superne praesertim ± ovata. *Calathium* c. 40-45 mm. diametro. *Ligulae* sat obscure luteae, marginales extus stria ± fusco-purpurea notatae. *Antherae* polliniferae. *Stylus* et stigmata ± fusco-virescentes. *Achenium* (immaturum) ± fusco-stramineum, apice ± spinulosum, caeterum laeve, c. 3.5 mm. longum in pyramiden, c. 5 mm. longam conicam abiens, rostro 9-10 mm. longum. This species resembles in its leaves and in general appearance *T. hamatum* Raunk., but differs from it in the lobes being less convex and through the outer phyllaries not being adpressed, but more or less recurved, narrower and unmarginated. Didcot, Berks; and a modification at Kingston, Berks, G. C. DRUCE.

423/67. T. SUBLAETICOLOR Dahlst. in Floestr. in Art. Soc. Faun. et Fl. Fennica xxxix., 4, 30, 1914. Near this form. The Parks and Shipton, Oxon, 1928, G. C. DRUCE.

423/83(2). T. SEMIPRIVUM Dahlst., nova sp. *Folia* sat laete viridia, glabra—subglabra, aequaliter multilobata, elongate lanceolata—obovato-lanceolata, longa, lobis latis, deltoideis, approximatis, apicem versus magnitudine accrescentibus, ± retroversis, acutis vel summis acutiusculis—obtusiusculis, dorso ± convexo, parce dentatis apicibus, saepe valde retroversis, lobo terminali ± ovato-hastato, breve acuto—obtusiusculo, integro, inferne denticulato, lobulis lateralibus brevibus, breve acutis—obtusiusculis, lobo terminali i foliis interioribus majore et latiore ovato-hastato, integro, obtusiusculo, petiolis inferne sat angustis et nervo mediano pallidis. *Scapi* quam folia longiores, apice basique praesertim ± colorati, subglabri vel vulgo passim ± araneoso-pilosi. *Involucrum* obscure virescens, basi ± truncata. *Squamae* exteriores ± ovato-lanceolatae, ± reflexa, subtus sat obscure supra laetius virescentes, saepe ± violascentes, emarginatae. *Calathium* subobscure lutescens, 45-50 mm. latum, sat radians. *Ligulae* marginales extus stria obscure badio-violacea ornatae. *Antherae* polliniferae. *Stylus* et stigmata ± fusco-virescentes. *Achenium* badium, 3.5 mm. longum, c. 1 mm. latum, apice breve spinulosum, caeterum ± laeve in pyramiden c. 0.5 mm. longum conicum sensim abiens, rostro 8-9 mm. longo. This species is very nearly allied to *T. privum* Dahlst., but differs from it through the shorter and recurved more acute lobes, and especially through the brownish coloured achenes. Abingdon, Harwell, Berks, G. C. DRUCE.

423/83(3). T. SIMILATUM Dahlst., nova sp. *Folia* gramineo-viridia, lingulata, elongate obovato-lanceolata, sparsim et minute praesertim in nervo dorsali pilosa, multilobata, lobis apicem versus folii magnitudine accrescentibus, infimis parvis, anguste acutis, interlobiis subulato-dentatis, sejunctis, intermediis angustis, longioribus, dorso ± subulate dentatis et ± acutis patentibus—sat porrigentibus summis latioribus saepe ± recurvatis, acutis, interlobiis brevioribus—subnullis, lobo terminali ± triangulari-hastato, mediocri—parvo in foliis inferioribus, majore integro vel inferne ± dentato et ± indeterminato acutiusculo, lobis lateralibus acutiusculis—acutis, petiolis angustis, ± violascentibus, nervo dorsali inferne leviter violascente. *Scapi* plures, folia aequantes vel superantes, apice basique praesertim ± colorati, glabri vel superne leviter araneoso-pilosi. *Involucrum* mediocriter longum, obscure viride—sat atroviride, basi ± ovata. *Squamae* exteriores sat late ovato-lanceolatae—latè lanceolatae, anguste sed sat conspicue marginatae. *Calathium* c. 45 mm. diametro, subradians. *Ligulae* obscure luteae, marginales extus stria brunneo vel cano-violacea notatae. *Antherae* polliniferae. *Stylus* et stigmata ± fusco-virescentes. *Achenium* immaturum fusco-stramineum, apice acute spinulosum, caeterum laeve, pyramide brevi conica, c. 3.5 mm. longum. This species is very similar in its general appearance to *T. Dahlstedtii* Lindb. f., but differs from it through the narrower pedunculate leaves with lobes increasing upwards and through lacking the short appendages under the top of the inner phyllaries. Abingdon, Berks, 1928, G. C. Druce.

423/84(2). T. STENACRUM Dahlst., nova sp. *Folia* laete viridia, glabra vel infra ± araneoso-pilosa, elongate lanceolata, multilobata, lobis longis, basi lata, saepe ± convexis, parce et longe subulato, dentatis anguste lobulatis, subito vel sensim in apicem longum anguste lingulatum—linearem, obtusum—obtusiusculum, ± patentem—porrigentem, rarius ± reversum protractis, lobo terminali hastato—sagittato, inferne saepe ± indeterminato, lobulis lateralibus mediocribus—sat longis linearibus patentibus—subporrigentibus, lobato mediano basi ± lata, ± longe, 2-3 dentata—lobulata, sat abrupte in apicem longum ut plurimum angustissimum obtusiusculum—subacutum protracto, petiolis et nervo mediano semper pallidis. *Scapi* quam folia breviores, pallidi, glabri vel superne ± araneosi. *Involucrum* mediocri sat pallide olivaceo-viride, basi ± ovato-truncata. *Calathium* c. 45 mm. latum, parum radians. *Ligulae* luteae, marginales extus stria cano-violacea notatae. *Antherae* polliniferae. *Stylus* et stigmata ± fuscentes. *Achenium* c. 3 mm. longum, 1 mm. latum, apice acute spinulosum, caeterum p. max. p. laeve superne in pyramiden conico-cylindrica abiens. This species is very well distinguished through its characteristic leaves with, at the base, broad, convex, more or less toothed lobes suddenly constricted into long linear ends and the hastate or sagittate end lobe with linear lateral lobes and at the base broad toothed midlobe suddenly tapering into a narrow post linear summit. This species is very nearly related to such Scandinavian forms as *T. laciniosum* Dahlst. and *sublaciniosum* Dahlst. The Parks, Oxford, 1928; a modification of it at Albury, Herts, G. C. Druce.

423/84(3). T. STENOGLOSSUM Dahlst., nova sp. *Folia* laete viridia, glabra—subglabra, multilobata, longa, ± lanceolata, lobis distantibus, basi lata brevi ± convexa, inferne saepe bidentata—bilobulata, superne interdum parce subulato-dentata subito in apicem longum angustum ± lingulatum subacutum—obtusiusculum patentem—porrigentem protracta superne in interlobia sat angusta vulgo integra abeuntibus, lobo terminali hastato—sagittato, parvo, mediocri—lobulis lateralibus brevibus—mediocribus vel sat longis lingulatis patentibus—porrigentibus vel etiam ± retroversis, lobulo mediano e basi latiore sensim in apicem ± lingulatum, obtusiusculum, mucronatum protracto, petiolis et nervo mediano pallidis. *Scapi* quam folia breviores, apice basique ± coloratis, glabri vel praesertim superne ± araneosi. *Involucrum* mediocre breve, crassiusculum, laete atroviride, basi ± ovato-truncata. *Squamae* exteriores ± ovato-lanceolatae—late lanceolatae, in apicem obtusiusculum—acutiusculum, sensim attenuatae erecto-patentes—recurvatae, parvum vel vix marginatae, in utroque pagina ± violascentes. *Calathium* 45-50 mm. diametro, parum radians. *Ligulae* luteae, marginales extus stria brunneo-violacae notatae. *Antherae* polliniferae. *Stylus* et stigmata fusco-virescentes. *Achenium* apice breve, spinulosum, caeterum fere laeve fusco-stramineum in pyramiden, c. 1 mm. longum, cylindricam, sat abrupte abiens. This species is very well distinguished through its slender, pale green leaves with lobes that, from a more or less broad, convex (after bilobated) base, are contracted more or less suddenly in a long, lingulate process and through the sagittate or hastate endlobes with narrow, lingulate, lateral and apical lobes. This is related to some Scandinavian species such as *T. expallidum* Dahlst., the more slender forms of which it very much resembles according to the figure of the lobes. Shipton, Oxon, 1927, G. C. DRUCE; Marlborough, Wilts, Mrs WEDGWOOD.

423/84(4). T. STEPTOLOBUM Dahlst., nova sp., ined. As a modification, Abingdon, Berks, G. C. DRUCE.

423/84(5). T. SUBEXPALLIDUM Dahlst., nova sp. *Folia* laete viridia, subglabra utrinque, in nervo dorsali sparsius, crebrius pilosa, multilobata, lobis latioribus—angustioribus, deltoideis, ± longis et ± patentibus reflexis, inferioribus et intermediis ± subulate dentatis, ± acutis, superioribus obtusiusculis, parum dentatis ± integris, lobo terminali in foliis exterioribus parvo mediocri vel saepe ± elongato integro—subintegro, lobulis lateralibus ± retroversis (subhamatis), acutiusculis—obtusiusculis, saepe apice ± rotundatis, lobulo apicali brevi—sat elongato obtusiusculo—sat obtuso, lobo terminali in foliis interioribus magno, maximo lato sagittato—ovato, ± obtuso—obtusiusculo, integro vel ima basi ± dentato—lobulato, lobulis solitariis, ± rotundatis, lobulis lateralibus brevibus, retroversis, acutis, petiolis pallidis, nervo dorsaii sat pallido levissime colorato. *Scapi* plures quam folia plerumque longiores, glabri vel apicem versus saepe ± tote araneosi. *Involucrum* breve, crassum, ± obscure olivacea-viride, basi ± truncata. *Squamae* exteriores in pagina inferiore ± obscure, in pagina superiore ± virescentes, ± lanceolata, recurvata—suberecto-patentes. *Calathium* c. 50 mm. diametro, subradians. *Ligulae* sat obscure luteae, marginales extus stria cano-violacea notatae. *Antherae* polliniferae. *Stylus* et stigmata sat

fusco-virescentes. *Achenium* fusco-stramineum, 3.5 mm. longum, 1 mm. latum, apice acute spinulosum, caeterum ± crebre tuberculatum in pyramiden, vix 1 mm. longum conicam sat abrupte abiens, rostro 9-10 mm. longo. This species resembles in some degree, especially in the blunt endlobes with frequently blunt side-lobes, the Swedish species *T. expallidum* Dahlst. and *T. linguatum* Dahlst., and is surely related to both. Oxford, Shipton, Oxon; Albury, Herts, G. C. DRUCE.

423/84(6). T. SUBLAETICOLOR Dahlst. in Floerstr. in Act. Soc. Faun. et Fl. Fennica xxxix., 4, 30, 1914. A modification of this was found at Shipton, Oxon, 1927; The Park, Oxford, 1928, G. C. DRUCE.

423/86(2). T. SILESIACUM Dahlst., ined. Mundford, Norfolk; Woodstock, Oxon, May 1928, G. C. DRUCE. These belong probably to an undescribed species which I have named as above. It is distributed throughout the European countries. H. DAHLSTEDT.

423. T. SEMIPALLIDUM Dahlst. Plants related to this have been found at Albury, Herts, G. C. DRUCE.

423. T. ACROGLOSSUM Dahlst. A plant gathered by Mrs MACALISTER HALL at Dunstable, Beds, 1928, Dr DAHLSTEDT says is possibly a form of the above. G. C. DRUCE.

438/2. VACCINIUM INTERMEDIUM Ruthe in York. W. Balfour Gourlay writes:—"I have come across *Vaccinium intermedium* of Ruthe again, on this occasion near Sheffield, on the Derbyshire-Yorkshire county boundary. I noticed it a month ago in the garden of Mr Samuel Doncaster at W. Winfell, Whirlow, some 4 or 5 miles S.W. of the centre of Sheffield. Mr Doncaster had a Cowberry, *Vaccinium Vitis-idaea*, planted in his rock garden as a border and was rather annoyed by the way that Bilberry, *V. Myrtillus*, cropped up among it and tended to replace it. Mr Doncaster had noticed that some of the "bilberry" plants kept their leaves longer than others. I thought that we might find the hybrid here which we did. It occurred in several places among the Cowberry and the plants of each patch were identical in habit. I felt certain that the plant had been accidentally introduced (like the Bilberry) with the Cowberry, and moreover that they were all separate portions of one single plant, artificially distributed by the gardener. I had not then the opportunity of investigating the matter. I have just returned from N. Wales and took the opportunity of staying a night at Sheffield. Mr Doncaster was very helpful. He took me in his car to see the farmer from whom he had obtained the Cowberry some 20 years ago. The farmer remembered the exact place where the plant had been obtained and directed us to it. We were to go to Rivington Inn, a quarter of a mile N. of his farm, and then turn W.S.W. along an old Roman road which had degenerated to a rough track or footpath. About three-quarters of a mile along this track, on the right, we should find a disused quarry. The Cowberry had been obtained all about this quarry. We followed the directions. I found a small patch of the hybrid about quarter of a mile from the inn, just to the right of the path (sample A). We went on to the quarry where I found two more patches of the hybrid (B) and (C). Patch (B) was growing in a small wood at the end of the quarry. Patch (C), which had very small leaves, like the specimens in Mr Doncaster's garden, was between the quarry and the wall. Patch (C) had a few unripe berries. I saw neither flowers nor fruits on patches (A) or (B). Patch (C) was the largest of them, being 22 yards by 5 or 6 yards. Great masses of Cowberry and Bilberry grew all about, but only near the quarry and alongside the path did I find the hybrid. (Compare my experience in Staffordshire.) The local rock was a red sandstone and the height above the sea about 1300 feet. Having crossed a stream, marking the county boundary, which joins the River Sheaf near Dore and Totley station, I presumed that I was in Derbyshire but, on examining the map. I see that the boundary follows the stream for two miles or so to Rivington Inn and then passes W.S.W. for a mile or so along the old Roman road for about a mile when it passes W.N.W. across the moors. The hybrid plants were therefore on the Yorkshire side of the boundary, though only by a yard or two, and so I cannot make a new county record. I may mention that the seeds mentioned in *Rep. B.E.C.*, 567, 1919, germinated and came true to the hybrid type though a few were indistinguishable from Cowberry. I left for India shortly afterwards, so did not follow up the experiment.

444/1. ANDROMEDA POLIFOLIA L. Near Goathland, North Yorkshire. On the 9th June 1924, Miss H. V. MEDLICOTT, of Partridge Hill, Goathland, discovered a small plant in flower growing in a boggy place on the moor near Saltersgate which Captain Medlicott named *Andromeda polifolia*. He sent this specimen in a letter to Mr Edgar Sykes who was at that time the schoolmaster here. Mr Sykes confirmed the identification. On the 16th June 1925 I accompanied Captain Medlicott to the place where his daughter found *Andromeda*. We made a careful search, but could not discover any more. Since then several unsuccessful attempts have been made to find more growths. *Vaccinium Oxycoccos* L. is plentiful in this situation. Unfortunately, Mr Sykes, now of Scarborough, had misplaced Captain Medlicott's letter containing the specimen. I urged him, however, to try and find it, and on the 25th March 1928, I received both from Mr Sykes, Captain Medlicott's letter being dated 16th June 1924. In order that there might be no doubt about the identity of this plant I sent it to Dr W. A. Sledge, Leeds, who had not the slightest hesitation in naming the specimen *Andromeda polifolia*. The discovery in this district of *Andromeda* is important. Baker, in his "Flora of North Yorkshire," gives two stations only for this plant: one on Strensall Common in No. 1 district, the Ouze and Foss area, and the other in or near Balderdale in No. 9 district, the West Tees area. Certainly it would have been better had more specimens been found, but further search will be made, and in the meantime it is desirable that Miss Medlicott's interesting discovery should be recorded. This is only the second record for vice-county 62. R. J. FLINTOFF.

446/1. ERICA CINEREA L., var. RENDLEI. Parkstone, Branksome, 1927, Studland Heath, Dorset, L. B. HALL; Cornwall, E. THURSTON. See *Journ. Bot.*, 25, 1928. This, like the vars. *anandra* and *schizopetala*, is a teratological rather than a natural variation.

446/4. E. CILIARIS × TETRALIX = E. WATSONI Bentham. In calyx, corolla, stamens and ovary *Erica Watsoni* exhibits definite points of difference from *E. ciliaris* on the one hand and from *E. Tetralix* on the other. The calyx of *E. ciliaris* is regularly four-partite, each sepal is ovate and in the upper part is fringed with about sixteen long glandular hairs. Two short bracts, each about half the length of a sepal, lie closely adpressed to two of the sepals. *E. Tetralix* has also a four-partite calyx but the sepals are narrowly lanceolate, fringed above with eight to twelve glandular hairs. The two bracts are equal in length to the sepals and similar in appearance; they do not overlie the sepals but are variously spreading so that the whole has often the appearance of an irregularly six-partite calyx. The four sepals of *E. Watsoni* are intermediate in shape and in the number of glandular hairs, and the bracts, usually adpressed to the sepals as in *E. ciliaris* but sometimes spreading, are about three-quarters of the length of the sepals. The corolla of *E. ciliaris* is asymmetrical, with a distinct neck and both neck and mouth of corolla are obliquely placed. In *E. Tetralix* the corolla is usually symmetrical, though the mouth may be obliquely placed, and there is never any trace of the " bottle-neck " characteristic of *E. ciliaris*. The corolla of *E. Watsoni* resembles that of *E. ciliaris* but the neck is shorter, broader and much less distinct. The stamens of *E. Tetralix* are provided with subulate awns about equal in length to the anthers. Those of *E. ciliaris* are awnless, while in *E. Watsoni* the awns are about one-third of the length of the anthers. The ovary is glabrous in *E. ciliaris*, clothed with relatively long white adpressed hairs in *E. Tetralix* and downy, with short white hairs, in *E. Watsoni*. In habit the plant is intermediate between *E. ciliaris* and *E. Tetralix* and in its usual form, with rounded cushion-like growth and clear pink flowers, can be recognised at sight, but forms occur which in habit approach one or other of the parents. *E. ciliaris* frequently occurs with abbreviated blunt-pointed spikes much like an extreme form of the hybrid, while *E. Tetralix* varies from a wiry-stemmed, pale-flowered form to a much more leafy and more richly coloured plant which approaches it at the other extreme. In these forms, however, the floral characters detailed above are at once decisive. F. RILSTONE.

458/2. STATICE PUBESCENS Sm., var. BRACTESCENS Dr. Near Littlehampton, E. Kent. Seen in various places for many years by Mr E. P. JAY who says it is an attractive plant but about a fortnight later in flowering than the type. Just as on the Quenvais in Jersey there is a strongly bracteate variety (var. *bracteata*) of *Statice plantaginea* so there is at Littlehampton this variety of *pubescens* having bracts over an inch long and a large head of blossom. The plant is sturdier than the type, the leaves are not so narrow and they are not so much enrolled. G. C. DRUCE.

460/6. GENTIANA [LINGULATA Ag.], var. PRAECOX Towns. A large patch of this plant was found on Bonchurch Down, near Ventnor, Isle of Wight, on May 9, 1925. It was noticed that there is very considerable variation in the division of corolla and of calyx, and the resulting observations may be of interest.

A. The normal plant has all flowers entirely 4-merous, that is both as to corolla divisions and calyx divisions.

B. The most frequent variation from the normal has the topmost flower 5-merous, with the lower flowers all or nearly all 4-merous; occasionally one or more of the lower flowers is 5-merous like the top flower. It would appear that quite 15% of the total vary in this manner.

C. Very occasionally (2 plants only seen) the topmost flower is 4-merous, with one or more 5-merous flowers below.

D. Occasionally (about 5% of the total) examples occur in which the numbers of the corolla divisions and calyx divisions of the topmost flower differ. These occur in 2 forms in about equal numbers—(1) top flower with 5-merous corolla and 4-merous calyx, and (2) top flower with 4-merous corolla and 5-merous calyx. One plant was found with the top flower having 3-merous corolla and 5-merous calyx.

E. It is noticeable that differences between the numbers of corolla divisions and calyx divisions occur only in the topmost flower, and in all these cases the lower flowers were entirely 4-merous. The lower flowers, whether 4-merous or 5-merous, have corolla and calyx divisions of equal number in every case.

Examples of the normal A. and variation B. are being distributed this year. The remaining variations were obtained in numbers insufficient for distribution.—P. M. HALL.

467/2. ANAGALLIS ARVENSIS × FEMINA. Bedale, Petersfield, Hants, F. R. BROWNING. Mr Browning writes, July 1928, that last summer there appeared in some newly-broken virgin ground on this estate the Blue Pimpernel among the already existent Scarlet Pimpernel. This summer he found that there were true hybrids between the two occurring on the same patch.

472/1(2). LIGUSTRUM OVALIFOLIUM Hasskarl. Alien, Japan. In hedges, of course planted, about Cahirciveen, Kerry, G. C. DRUCE and R. H. WILLIAMSON.

484/3. COLLOMIA BIFLORA (R.P.) Brand. *C. coccinea* Lehm. Alien, Chili. Hortal. On rubbish in the neighbourhood of Falkirk, Stirlingshire, J. R. LEE. A garden plant introduced in 1831 and figured in the *Botanical Register*, t. 1622. Identified, as probably this species, by Dr THELLUNG.

506/10. MYOSOTIS VERSICOLOR Sm., var. LLOYDII Corb. Nouv. Fl. Norm., 692, 1893. Characterised by "Fleurs jaunes, passant au bleu très pâle, sans autre nuance." Banstead, Surrey, C. E. BRITTON in *Journ. Bot.*, 41, 1928.

509/6. ECHIUM HUMILE Desf. Alien, Egypt, etc. Barry, Glamorgan, R. L. SMITH. This, a purely Egyptian species, is made synonymous with *E. setosum* Vahl in Ind. Kew., but Muschler (*Fl. Egypt.* ii., 795) cites *Echium setosum* for *Anchusa aggregata* Lehm., which has a much wider range with Syria and Palestine. G. C. DRUCE.

543/7. VERONICA BECCABUNGA L., nov. var. vel forma ELEGANS Dr. Plant 4-6 inches high; leaves elliptic, about 25 by 10 mm., slightly stalked; inflorescence about 50 mm. long of 8-11 bright blue flowers. This plant is conspicuous from its narrow leaves and neat habit. Side of pond, Foxhall, Northants. G. C. DRUCE.

543/13(2). V. AUSTRIACA L. Alien, Europe? Hortal. Waste ground near the Shooting Box, Martin Mere, Southport, S. Lancs. 1926, F. W. HOLDER and R. WAGSTAFFE.

543/18. V. TOURNEFORTII Gmel. See C. E. BRITTON in *Journ. Bot.*, 41, 1928. *V. persica* Poir., var. *Aschersoniana* E. Lehm. in *Oest. Bot. Zeit.*, 249, 1909, as sub-sp. Leaves simple and sharply serrate; sepals oblong-lanceolate, gradually contracted from the middle to the apex; lower corolla lobe paler than the upper and lateral. Besilsleigh, Berks. G. C. DRUCE.

Var. CORRENSIANA (E. Lehm., as a sub-sp. of TOURNEFORTII Gmel.). Bosham, W. Sussex, E. S. MARSHALL, No. 2576, as *polita*, var. *grandiflora*; Tintern, Monmouth, W. A. SHOOLBRED, as *V. polita*; St Mary Cray, W. Kent, W. O. HUME in Herb. South Lond. Bot. Inst., as *agrestis*. Lambridge, Oxon, G. C. DRUCE.

543/19. V. AGRESTIS L., var. GARCKIANA Fourn. Keel and upper part of the capsules clothed with erect, glandular hairs. The common form.

Var. BORAEANA P. Fourn. Only noted from Surrey. Entire surface and keel covered with erect, glandular and curled, eglandular hairs.

Var. VERSICOLOR Math. Fl. Gen. Belg. i., 391. Well marked by its oblong, very obtuse sepals. The type *agrestis* has tapering sepals. Uncommon. See C. E. Britton in *Journ. Bot.*, 43, 1928.

543/20. V. DIDYMA Ten., var. THELLUNGIANA. *V. polita* Fr., var. *Thellungiana* Lehm., is the common British form of *V. polita* Fr.

550/1. OROBANCHE RAPUM-GENISTAE Thuill., var. BRACTEOSA (Reuter). Gwydderig, Brecon, 1905, H. H. KNIGHT.

550/7. O. HEDERAE Duby, forma STENANTHA (Loj.) G. Beck. Betchworth, Surrey, C. E. SALMON; Les Ruelles Brayes, Guernsey, 1888, Miss M. DAUBER, teste BECK. See *Journ. Bot.*, 168, 1928.

558/12. ×MENTHA RUBRA × VERTICILLATA. Mr FRASER thus identifies a Mint which the Rev. F. TURREFF found near Fyvie, N. Aberdeen, in July last. He says "the stems and leaves are far too hairy for *M. rubra*. The pedicels have a few scattered hairs, but often many at their junction with the calyx. Many of the calices have hairs at the base, and on the calyx teeth the hairs are very long." It is asserted that *M. rubra* is a hybrid of *aquatica* × *arvensis* × *spicata* while *verticillata* is a hybrid of *aquatica* × *arvensis*.

566/20. SALVIA REFLEXA Hornem. *S. lanceifolia* Poiret. Alien, North America. Sent from a cornfield at Fritton, Norfolk, by Miss SALMON. This species has been found adventive in Europe.

586/1. TEUCRIUM SCORODONIA L., var. ACROTOMUM L. B. Hall in Journ. Bot., 299, 1928. Exmoor, Somerset, 1922. Cultivated for six years it has retained its character. It is distinguished by its suborbicular, cordate leaves and by the main lateral vein on each side of the upper lip of the calyx being strongly incurved towards the apex. The cultivated plant has leaves recalling those of *Glechoma*.

588/5. PLANTAGO MARITIMA L., lusus. Sent by E. THURSTON from Par, Cornwall, where it was gathered by L. T. MEDLIN. The spikes are short and foliaceous, the bracts being about one inch long, giving an outline like that of *Phyteuma orbiculare*.

588/10. P. MAJOR L. A curious lusus was sent by W. TRESIDDER from Charlestown, St Austell, Cornwall. It had a long panicled inflorescence of 230 mm.

Var. BRACTEATA Dr. Major ROBERT ORME writes, July 9, 1928:—"In 1914 I found on Salisbury Plain, Wiltshire, *Plantago major* with large foliate bracts. I put it in a rockery at our home in Hampshire and when I went there after the war there was no trace of the original plant but several seedlings about the garden all true to type. I brought one of these here (Budleigh Salterton) and its seedlings are flowering this summer still quite true. Some of these are from seed I scattered far from the parent plant."

588/19(2). P. EXIGUA Juss. ex Murr. in Comm. Goett., t. 5, p. 94, 1778. *P. pumila* L. f. Supp. 125. Alien, Reg. Medit., etc. Dagenham, S. Essex, R. MELVILLE.

597/2. CELOSIA TRIGYNA L. Mantissa, 212, 1771 (non Wight nec Willd.). Alien, Tropical Africa. Avonmouth, Bristol, W. Gloster, H. J. GIBBONS.

600/1(2). CHENOPODIUM CRASSIFOLIUM Hornem. Hort. Hafn., 254, 1813 (non Bieb.), var. DEGENIANUM Aellen in Ungarische Bot. Blätter, 627, 1926. Below Shornemead Fort, W. Kent, September 1893, A. H. WOLLEY-DOD in *Herb. Kopenhag*. This was distributed through the

B.E.C., see *Report*, 422, 1893, where Wolley-Dod says:—" This is Syme's station, I suppose, though the plant does not grow on the embankment but on the muddy bank of the ditch below it. I found it in considerable quantity, extending almost to Cliffe Foot, and I saw it also on the inland border of the marshes, a mile from the river." This plant needs further study and I am communicating with Dr Aellen on the matter.

600/8. C. ALBUM L., sub-sp. OVATUM Aell. in Bot. Notis. Lund, 209, 1908. Avonmouth Dock, W. Gloster [No. 1], November 1, 1928, Mrs SANDWITH and J. W. WHITE.

600/8. C. MIXTIFRONS Murr, sub-sp. nova under grex VIRIDE. Foliis omnibus saturate viridibus, inferioribus subtrigonis sinuato-dentatis, superioribus ovatis; inflorescentia subcymosa, glomerulis crassis," J. MURR *in litt.* This was found by me in 1926 at Didcot, Berks, on waste ground between the loop and the old Great Western main line. G. C. DRUCE.

600/8γ. C. ALBUM L., var. OVATUM Aellen in Bot. Notis. Lund, 209. 1928. [No. 1] Avonmouth Docks. W. Gloster, November 1928, Mrs SANDWITH and J. W. WHITE.

600/8. ×C. VARIABLE Aellen, var. MURRII Aellen in Fedde Rep., 1929. =C. ALBUM L. × C. BERLANDIERI Moq., sub-sp. ZSCHACKEI (Murr). *C. subcuneatum* Murr is not a hybrid. [No. 2] On a tip at Avonmouth Docks, W. Gloster, November 1928, Mrs SANDWITH and J. W. WHITE.

600/8. ×C. VARIABLE Aell., var. MURRII Aell. in Fedde Rep., 1929= ALBUM × BERLANDIERI Moq., sub-sp. ZSCHAEKEI (Murr) Aell. Tip at Avonmouth Docks, November 1, 1928 [No. 2], Mrs SANDWITH and J. W. WHITE.

600/8(3). C. ALBUM L., grex VIRIDE, var. (as nov. sub-sp.) DELTOPHYLLUM J. Murr ined., 1928. Foliis omnibus deltoidis-ovatis, brevibus, sat parvis, subcrassis ramis, inflorescentiae paucis abbreviatis, glomerulis grandis. Avonmouth, Bristol, C. & N. SANDWITH.

600/11. C. LEPTOPHYLLUM Nutt., var. LEPTOPHYLLOIDES (Murr) Thell. & Aell. Southampton, J. F. RAYNER. At first determined by Thellung as var. *oblongifolium* S. Wats., but afterwards made a distinct variety. It replaces *oblongifolium* in the *List*.

600/11. C. LEPTOPHYLLUM (Nuttall) Brown & Britton, var. LEPTOPHYLLOIDES (Murr) Thell. & Aellen. (Var. *oblongifolium* auct. Eur., not of S. Watson, as in *Rep. B.E.C.*, 305, 1921, and 621, 1922). Near Southampton, 1921, J. F. RAYNER.

600/12. C. FICIFOLIUM Sm., var. DOLICHOPHYLLUM Murr in Mag. Bot., t. 1, fig. 2. 338, 1902. Alien, China. In some plenty on the dumps between Drayton and Iver, Bucks, September 1928, G. C. DRUCE.

600/13. C. GLAUCUM L., var. MICROPHYLLOIDES Dr. This is the var. *microphyllum* Murr, *in litt.*, from Port Meadow, Oxford, GAMBIER PARRY, and from Syston Common, Mangotsfield, Mrs SANDWITH. See *Rep. B.E.C.*, 780, 1925. The name is already occupied by *microphyllum* Hook. f., so that a different name has to be used.

600/16. C. AMBROSIOIDES L., var. DENTATUM Fenzl. *C. chilense* Druce & Hayward Adv. Fl. Tweedside, p.p. Galashiels, Selkirk, September 1913, Miss I. M. HAYWARD.

600/16. C. AMBROSIOIDES L., var. DENTATUM Fenzl. Galashiels, Selkirk, September 1913, Miss I. M. HAYWARD. Thought by Murr to be *C. chilense* Schrad.

Var. SUFFRUTICOSUM (Willd.). Boston Docks, Lincoln, G. C. DRUCE.

600/18(2). C. TRIANGULARE R. Br. *C. paniculatum* Murr, ? of Hook. Alien, Australia. Canal. Bradford, Yorks, 1919. J. CRYER and G. C. DRUCE.

600/21. C. HIRCINUM Schrad., var. DEMINUTUM (Ludwig) Aell. Selkirk, G. C. DRUCE; Barsby, Leicester, A. R. HORWOOD, as *Vulvaria*. See *Rep. B.E.C.*, 368, 1915, where I refer it to a form of *hircinum*. Pye Hall Farm, Wrentham, Suffolk, A. R. HORWOOD; Bradford, Yorks, J. CRYER and G. C. DRUCE; Welbeck, Notts, R. GOULDING; Bayswater, Oxon, 1912, G. C. DRUCE; St Clare Road, Colchester [2130], G. C. BROWN; Cardiff, Glamorgan, G. C. DRUCE; Milverton, Warwick, 1898, BROMWICH; Exeter, Devon, 1908, DRUCE.

Var. MULTIDENTATUM (Ludwig as forma). Bradford, Yorks, J. CRYER.

600/21. C. HIRCINUM Schrad., forma LATILOBA, minus farinosa, teste Dr J. Murr. On rubbish at Burton-on-Trent, Staffs, 1928. G. C. DRUCE.

600/21. C. HIRCINUM Schrad., var. MULTIDENTATUM (Ludwig, as forma). Sent to B.E.C., September 19, 1917, by Mr J. Cryer, as *C. hircinum*. Named as "forma *multidentatum* Ludwig by P. Aellen, 1928."

Var. DEMINUTUM (Ludwig) is a common form of *hircinum* as from Exeter, August 1908, G. C. DRUCE, which Murr labelled forma *obtusifolium*; Milverton, Warwick, 1898, H. BROMWICH; Bradford, York, 1921, G. C. DRUCE; Colchester (n. 2130), G. C. BROWN; Cardiff, Glamorgan; Bayswater, Oxford (which Murr labelled "forma foliis protractis Ch. ficifolio similis"). G. C. DRUCE; Welbeck, Notts, R. W. GOULDING; Bradford, Yorks, 1918, J. CRYER, who noticed that it was not so distinctly three-lobed or attenuated as in var. *subtrilobum*; Pye Hall Farm, Wrentham, Suffolk, 1917, A. R. HORWOOD; Barsby, Leicester, 1915, A. R. HORWOOD, as *Vulvaria*, see *Rep. B.E.C.*, 368, 1915, where I said it was *hircinum* or a closely allied species.

600/21(2). C. PALLIDICAULE Aell. *C. hircinum*, var. *subtrilobum* (Issler, Murr p.p.). Galashiels, Selkirk, 1913, Miss I. M. HAYWARD and G. C. DRUCE.

600/21(2). C. PALLIDICAULE Aellen in Fedde Rep., 1929. Det. P. Aellen on December 29, 1928. This is the *C. hircinum*, var. *subtrilobum* Issler, p.p., from Galashiels, Selkirk, 1913, Miss I. M. HAYWARD. Alien. In appearance it recalls *C. hircinum* Schrad., var. *subtriflorum* Issler, and was so called by Murr.

600/26. C. CARINATUM R. Br. Bradford, Yorks, September 5, 1917, J. CRYER, as *C. Botrys*. P. Aellen in 1928 refers it to *carinatum*.

600/27(2). C. FOETIDUM Schrad., var. GRACILE Aell. *C. graveolens* Willd., ? *incisum* Poir. Tweedside, Selkirk, at the junction of the Gala and Tweed, Miss I. M. HAYWARD, as *graveolens*. See *Adv. Fl. Tweedside*, 200. Dr Aellen refers it to his var. *gracile*.

600/29. C. AURICOMIFORME Murr & Thell. Bradford, Yorks, G. C. DRUCE and J. CRYER.

600/31. C. FOETIDUM Schrad., var. GRACILE Aellen. Alien, S. Africa. Tweedside, Selkirk, 1913, Miss I. M. HAYWARD. See *Adv. Fl. Tweedside*, 200, 1919, where it was referred to *graveolens* by Dr Murr. Aellen in 1928 identifies it as above.

600/31(2). C. AMARANTICOLOR Coste & Reyn. in Bull. Bot. Soc. France liv., 181, 1907. Alien, but the native country unascertained. Det. Dr MURR. Field near the Tweed, Galafoot, Selkirk, 1926, Miss I. M. HAYWARD. A striking plant when fresh, suffused with purple. It was unfortunately not fruiting. It is probably of S. American origin.

600/35. C. HOLOPTERUM (Thell.) Thell. & Aell. Alien, origin uncertain. Lanal. Tweedside, Selkirk, 1914, Miss I. M. HAYWARD and G. C. DRUCE.

600/35. C. TRIANGULARE R. Br. Prod., 407, teste P. Aellen, 1928. Alien, Australia. Bradford, Yorks, 1921, J. CRYER and G. C. DRUCE.

609(2). POLYCNEMUM L.

609(2)/1. P. ARVENSE L. Alien, Europe, Medit., etc. Avonmouth, Bristol, W. Gloster, H. J. GIBBONS.

618/3. RUMEX CRISPIS × PALUSTRIS. To this Dr Danser refers a Dock which I have found on waste ground at Burton-on-Trent, Staffs; Dundee, Angus; and Golspie, Sutherland. G. C. DRUCE.

637/2. URTICA URENS L., var. INERS (Forsk. as sp.) Weddell. Plant without stinging hairs. Noticed by the Rev. W. W. MASON with Canon FOWLER and WOODRUFFE-PEACOCK at Bootle, Lancashire. The leaves were darker and more shining than the type.

Nov. var. ELEGANS Druce. In this plant, which was gathered near Melmerby, Cumberland, by the Rev. W. W. MASON, the elliptic leaves, 3 × 5 cm., are regularly cut into open teeth about 8 mm. long, each tooth having a secondary on its margin; the sinus is rounder and the leaf stalks are about 2 cm. long and slender.

643/3. ALNUS VIRIDIS DC. Alien, Europe, N. America, N. China. Planted in cold damp places, Bradoonie, Angus; Banchory, Kincardine, Miss TODD. This differs from *Alnus* and *incana*, which have the male and female in one inflorescence, in the male flowers appearing in the autumn and the females in the spring. The leaves vary in the degrees of hairiness which is mostly confined to the nerves.

650/1. SALIX PENTANDRA L., var. LATIFOLIA Anderss. Leaves 4.25 cm. across × 9-10 cm. long. Meathop, Westmorland, 1902, Rev. W. W. MASON.

650/3. S. ALBA L., var. STENOPHYLLA Fraser. Differs from the type by its narrower leaves 6-7 mm. across × 11-12 cm. long.

650/9. S. AURITA L., with male and female flowers on the same catkins. Cwmystwyth, Cardiganshire, April 1928, J. H. SALTER.

669/5. ORCHIS MORIO L., nov. var. BARTLETTII. This interesting new variety occurred in considerable numbers at the Blackhall Rocks, Co. Durham. It varies from the type in having flowers only half the linear dimensions of the type. No intermediate forms occurred. J. W. HESLOP-HARRISON.

669/14. O. MASCULA L. × O. MORIO L. This hybrid was found growing amongst the two parent species in a field on the top of the cliffs at Blackhall Rocks, Co. Durham. J. W. HESLOP-HARRISON.

669/14. O. MASCULA L. × HABENARIA GYMNADENIA Dr. = × ORCHIS ROBSONII. This hybrid, of which only one specimen was noted, was discovered growing in a mixed colony of the parents, both of which were then in flower, on June 12, 1927, at Blackhall Rocks, Co. Durham. The plant gave one, at first sight, the general impression that it was a tiny version of *O. mascula* with its lax flower spike coloured from the tip of the inflorescence to the lowest flower but one a purple of a lighter tint than in *O. mascula*. The leaves, it is important to note, were unspotted, indicating, in all probability that, as far as this cross is concerned, "unspottedness" tends to behave as a Mendelian dominant. In height the flowers from the tip of the lip to the level of the expanded lateral sepals averaged 1.8 cm., the lip itself having a breadth of 8 mm., and a maximum length (in the middle lobe) of 6.25 mm. In colour, the flowers were intermediate between the rich purple of *O. mascula* and the rose-purple of *Habenaria Gymnadenia* whilst their scent was of a delicate diluted type resembling that of the latter parent. The unspotted lip was three-lobed, with the slightly cleft median lobe more elongate and narrower than the lateral pair. The throat, necessarily smaller of course, more nearly approached that of *O. mascula*. The spur, which was fairly slender, varied from flower to flower in length, being generally as long as in *H. Gymnadenia* but occasionally two or three millimetres shorter.

As for the sepals, the lateral pair were more or less spreading while the middle one was applied to the hood. The bracts were single nerved, purple in colour, but paler toward the centre. Altogether the plant was a good intermediate to its parents. I have named this novelty × *O. Robsonii* in honour of Mr C. E. Robson, the Secretary of the Natural History Society of Northumberland and Durham. J. W. HESLOP-HARRISON.

669/17. O. PYRAMIDALIS L., nov. var. or sub-var. SANGUINEA. On the shell-sand pastures near Roundstone, Galway, August 1928. This beautiful plant differs from the type in having flowers of a bright blood-red colour instead of rosy pink. The shape and size of the flowers are normal. I am unable to find any reference to this variation—it is not mentioned by Camus. G. C. DRUCE.

718/1. JUNCUS MARITIMUS Lam., var. CONGESTUS L. B. Hall. Shore of Poole Harbour, near Studland, Dorset, 1927 and 1928. See *Journ. Bot.*, 361, 1928. This will come in my *List* under the older species name of *spinosus* Forskal as var. *congestus* (L. B. Hall) comb. nov. G. C. DRUCE.

718/15. J. GERARDI Lois., var. REPENS Buchenau. A pretty, creeping form is frequent round the southern side of Lady's Island, Lake Wexford. It is not so small as typical *repens* but verges towards var. *soranthus*. The plants are from 2 to 5 inches high, extensively creeping, with the leaves sometimes exceeding the inflorescence.

737/1. POTAMOGETON NATANS L., var. PYGMAEUS Gaudin. Loch Winlan, Caithness, G. C. DRUCE, teste DALGLEISH.

737/5. P. ALPINUS Balb., var. (not ×) PALMERI Druce, growing in the river near Odiham, and suggesting a *praelongus* parentage. Mr Arthur Bennett has been re-examing it and, *in litt.*, August 13, 1928, says it is "a very rare variety (instead of a ×), *i.e.*, *P. alpinus*, var. *Palmeri* Druce, characterised by the extreme greenness, the semi-clasping of its upper leaves, their tenuity and their exposing the veins so clearly; the shape of the leaves, approaching those of *praelongus* but no split at apex. Also at Beccles, Suffolk, and from Cheshire; the latter was labelled *praelongus*."

737/6. P. GRIFFITHII Bennett. See *Rep. B.E.C.*, 787, 1925; 36, 1926. Hagström asserts positively that it is the hybrid *nerviger* Wolfg. but Bennett is equally positive that it is a species. Twice I have visited the lake but I have failed to find any other species than *oblongus*. The water was too cold for a long immersion, and on my first visit a couple of lovers, who for a time would not move, made swimming rather difficult. I asked my friend, Mr A. Wilson, to investigate the lake and in response he has written these two interesting letters. As will be seen these give no support to the presence in any form of the alleged parents of *nerviger—alpinus* and *praelongus*. G. C. DRUCE. 20/8/1928, "In response to your remarks in a recent Report that it was desirable to see what other species of Potamogeton, besides *P. Griffithii*, grow in Llyn Anafon, my son and I visited the lake on August 4th, armed with a rake and long cord attached to it. We spent 3½ hours there, and succeeded in obtaining about 15 flowering specimens of *P. Griffithii* for the Club. They were growing in deep water about 15 yards out from the west shore, and there were many more further away and beyond where we could throw the rake. There is a quantity of *P. polygonifolius* [*oblongus*] near the shore on the opposite side of the lake, but we found no other species at all. The leaves of the *P. Griffithii*, besides being wavy, are somewhat spirally twisted, the latter character not being mentioned in the books." 23/8/28, "Further, with regard to the *Potamogeton Griffithii*, the part of the lake where it grows nearest to the shore is on the S.W. side where the ground is rocky and slopes down steeply. It does not grow anywhere near the edge but only in water, say, 7 ft. or more deep. From a rocky knoll just above the shore on the slope of the mountain "Llwydmor," we were able to look down on the water and see the plant scattered over an area of an acre or more, the flowering stems just reaching or rising slightly above the water as the ripples met them. Owing to the recent drought the water was very low at the time of our visit and the season was well advanced. Although one cannot entirely solve the problem unless the entire lake was explored, we think it very improbable that any other species occurs there (except *P. polygonifolius*), as we tried dragging the water almost all round, and vegetation could be seen from the knoll in the centre of the lake. *P. polygonifolius* is abundant in shallow water on the opposite shore of the lake, along with *Lobelia Dortmanna*, *Littorella*, *Menyanthes*, *Callitriche intermedia*, *Glyceria*, etc. I understand that the village of Llanfairfechan is going to augment its water supply by converting the lake into a reservoir and building a dam. The water will then have a great rise and fall and most, if not all, the interesting vegetation will disappear. Several of our Carnarvonshire mountain lakes have already shared this fate. Nothing of interest now grows in them."

771/8. STIPA HYALINA Nees Agrost. Bras., 378. Alien, Argentina, etc. Bristol, Mrs SANDWITH.

824/2 and 824/10. POA PRATENSIS L. and P. COMPRESSA L. Miss ALICE M. ANDERSON in *Journ. Agric. Research*, vol. 54, n. 11, Washington, June 1, 1927, describes "The Development of the Female Gametophyte and Caryopsis" of these species. It appears that the seeds require an alteration of temperatures for germination. An exposure of the seeds of *pratensis* (the caryopsis enclosed in the lemma and pale) on moistened blotters at a temperature of about 30° C. for 6 hours and of 20° for 18 hours each day resulted in complete germination of the viable seeds in about 28 days; so too with *P. compressa* in about three or four weeks. This able paper is illustrated with many figures.

824/2. P. PRATENSIS L., var. ALPESTRIS Anders. High Force, Teesdale, Durham, June 1928, G. C. DRUCE.

824/6. P. TRIVIALIS L., var. EFFUSA A. & G. Stratford-on-Avon, Warwick, 1902, Rev. W. W. MASON. Differs from the type in its lax, open inflorescence.

827/16. BROMUS SECALINUS L., var. POLYANTHUS Beck as forma. Acton, Middlesex, G. C. DRUCE. This may be the same as var. *grossus* (DC.).

827(2). BOISSIERA Hochst. Gr. iii., 1175.

827(2)/1. B. BROMOIDES Hochst. Alien. Orient. Dagenham, S. Essex, R. MELVILLE.

832. AEGILOPS Hybrids. Prof. J. Percival. *Ae. cylindrica* × *ovata* possesses all the morphological characters of *Ae. triuncialis* and cannot be distinguished from it except by its sterility. He also says he has discovered that *Ae. cylindrica* × *triuncialis* exactly resembles *Ae. persica* Boiss. He has no doubt that *triuncialis* is of hybrid origin. Certainly it is a most variable plant.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1928.

(*Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.*)

Balls, W. Lawrence, Sc.D., F.R.S. Studies of Quality in Cotton. Pp. xxi., 376, and 130 figures. Macmillan & Co., 1928; 20/-. In our *Report* for 1926 Mr W. H. Johnson's elaborate work on "Cotton and its Production," which was issued by the same eminent firm, was reviewed. There it was stated that out of the world's production of Cotton our dependencies only afforded a bare 10 per cent., therefore it was incumbent for us to increase this amount as far as possible. A most interesting history of Cotton was given. This work is on other lines. Its purpose is to present an outline of the relationships which connect the properties of cotton yarn with those of the raw material from which the yarn is made. Therefore it is to the technicalities of cotton manufacture that this work is devoted. As the author says—"The dangling spindle with its whirl of clay is one of the oldest tools which mankind has invented. The hoe made out of a deer's antler . . . . is another of our most venerable possessions. But the two were handled separately even in the dawn of tool using: the spindle by the women, the hoe by the men. The spindle was more important to the nomads, the hoe belonged to the settlers on the soil." The aim of the work is, therefore, to bring into close scientific relationship the producers and spinners of Cotton and to ensure, by the most up-to-date methods, that the spinner obtains the kind he finds most useful. This in turn will increase the capabilities of the cotton grower—"the men of the hoe" talking common language to the "men of the spindle." The author has been fortunate enough to have served with both classes, and manifold and wondrous are the mechanisms he has designed and described in their common interest.

Bateson, William, F.R.S., Naturalist: His Essays and Addresses, together with a short account of his life by Beatrice Bateson. Cambridge University Press, 1928; 21/-. Mrs Bateson has indeed erected a striking monument to her husband in preparing this comprehensive sketch of a rare personality. Originality of mind showed itself early in his life and there were in him all the makings of a naturalist. From his preparatory school at Temple Grove he won a Rugby Scholarship in 1875 when Dr Jex Blake was Headmaster. There he proved no success. He was not happy in his surroundings or in his work, nor was he popular with the boys—he was one out of his groove, and said "his pluck had been knocked out of him." Had it been purely scientific teaching in a modern technical school he might have been happier and, perhaps, more successful, but doubtless he would have become more priggish and conceited. In after days he said he looked back on his school education as a time of scarcely relieved weariness, mental starvation, and despair. But his half-holidays, spent with our old friend, Linnaeus Cumming, were bright in his memory. He left Rugby in 1879, and entered at St John's College, Cambridge, where his father then was Master, but he was ploughed in mathematics in the "Little Go." On this he writes in 1905:—"I was specially coached in mathematics, which were my difficulties at school, and was again coached at Cambridge, but failed; coached once more, I passed, having wasted several hundreds of hours on that study, but my knowledge of it is nil. My case is that of hundreds. Why then are not compulsory mathematics to be reformed away?" The reply he gives is that "the things that put the touch of art in the life of a dull boy, that opened his eyes at once to another world where utility does not count—they, forsooth, must be dispensed with because in the market they have no value. And, verily, they are without price." However, puberty being passed, in 1882 he took a first in the Natural Science Tripos, and was elected to a college scholarship. He became a good linguist, dabbled at politics which he soon discarded, and travelled into Siberia, then in 1883 to the States, and in 1886 to Germany, when the pictures at Dresden were to him a great joy. These he studied with a critical eye. Notwithstanding his earlier criticism on a public school education he threw himself with characteristic fervour into the defence of compulsory Greek for the University curriculum, and writes that "if a student lays the basis of a technical education without Greek, be it ever so sound, he will begin his life whence he must needs end it, in the Black Country of the commonplace." One wonders what his boyish feelings would have been if the syllabus of education he suggested in one of his later addresses had been used at Rugby. Probably not much more kindly than those he, with his somewhat irritable temperament, had for the Jex Blake system. In 1894 he was elected to the Royal Society. These and other matters are lovingly enumerated in vivid sketches by Mrs Bateson. It is pleasing to see the reference to Weldon, with whom he had sharp controversy. He says—"To him I owe the chief awakening of my life—such a debt is perhaps the greatest that one man can feel towards another." In 1907 he was in America, "where the tyranny of religion and temperance is daily making itself felt." Of his feelings about the Great War and its peace settlements one had best be silent. In 1924, with D'Arcy Thompson (whom that year I met in Stockholm), he went to Russia, where about a hundred scientists met, but there of Liberty he saw no sign, "the want of freedom is far more serious." After a short illness he died on February 8, 1926. As Mrs Bateson well says, he was a rare personality, with curious contradictory characters, impulsive, alert, on the surface somewhat pugnacious, but deeper there was a real kindness of heart and able and acute intellectual powers. Thirteen papers and addresses on scientific subjects are given in extenso, including his Presidential address at the meeting of the British Association at Adelaide and Sydney, which the writer had the good fortune to hear, but they were not the most successful of his speeches. There are also educational essays and three lengthy reviews. The appendix contains a rough list of controversies in which he was engaged, and an index of persons alluded to in the text, as well as one of subjects. An excellent sketch of him from the pencil of W. Arnold Forster is given as a frontispiece.

BATESON, WILLIAM, SCIENTIFIC PAPERS OF. Edited by R. C. PUNNETT. Vol. I., pp. 452, pl. vii.; Vol. II., pp. 453, pl. xxix. Cambridge University Press, 1928; each volume 2 guineas. In these two handsome volumes Mr R. C. Punnett, who has already popularised Mendelism, adds another indebtedness in editing and arranging what is practically the Scientific Work of Prof. Bateson so that students may readily consult these important papers which in the main are arranged in chronological sequence. They are scattered throughout many publications. It may be mentioned that his lengthy Reports to the Evolution Committee of the Royal Society, 1902-7, are not given in these volumes. In *Rep. B.E.C.* 37, 1926, a sketch of the life and labours of Bateson are given. The issue of the present volumes is due to the generosity of the Syndics of the University Press. The papers on the whole fall into two well-marked groups—one volume dealing mainly with Variation, the other concerned chiefly with Heredity, each volume being separately indexed. The papers, save for correction of slips or misprints, are as they were originally published save for such small textual alterations as were made by the Author in his own copy. The necessity of referring to the original paper is thus avoided. Among the papers of special Botanical interest are those on the origin of the Cineraria. The plant from the Canaries he calls *cruenta* (? *Senecio cruentus* DC.). See *Nature* LI., 1895. He thinks that Cinerarias are species which hybridise freely and that our modern forms have arisen through such hybrid unions. On p. 374 of Vol. I. he treats of the inheritance of variation in the corolla of *Veronica Buxbaumii* and on plate vii. 20 forms are printed in colour. He takes (1) normal flowers to have a corolla of four "petals," one posterior, of a deep blue colour, one interior, which is narrower, of a pale bluish-white, and two lateral, of about the same size as the posterior, which in intensity of colour are intermediate between the upper and lower. (2) Corolla with two interior "petals," the posterior and two lateral are normal, but the interior is divided into two "petals." (3) Corolla with two posterior "petals," each more than half the size of the normal one. (4) Corolla with six "petals," five with three "petals," six with two petals, seven with four "petals" set obliquely. There are also symmetrical and asymmetrical forms and forms with very small flowers. A large number (135) of cultural experiments were tried and tables of the results are supplied. It was not found that these variations (abnormalities) bred true. It may be noted that throughout he alludes to the Scrophulariaceae as having petals. He does not appear to have noticed whether leaf-variation could be correlated with that of the flowers, so that the variations noticed by Mr

C. E. Britton in *Veronica* are in another category. The second volume opens with " The Problems of Heredity and their Solution "—which is an early examination of Mendel's principles, followed by " The Facts of Heredity in the light of Mendel's discovery." The genetics of *Primula sinensis* (reprinted from the *Journal of Genetics*) is excellently illustrated with process-prints, as is that on the Red-legged Partridge. To the layman many of these papers lack a summary. Nor does it seem that he has given the chromosome theory adequate recognition. Various reviews written by Bateson are included, and in these there are many instances of his hard, but not unfair, hitting. That on the " Age and Area " theory of Dr Willis is an example. Eight pages are devoted to an excellent Bibliography. The Cambridge University Press is to be congratulated on producing this costly but most useful work, on which there is not likely to be a financial return, but on which a fair judgment upon Bateson's position as a scientist may eventually be decided.

Becherer, A. Zur Nomenklatur einiger Sippen Mitteleuropaischer Gefälspflanzen. Fedde Rep. xxv., 10-15, 1928. In this a great many sub-species are formed with new combinations, while others are quoted from previous works. Among them are *Carex muricata* sub-sp. *eu-muricata* Syme. One is glad to see that *contigua* Hoppe is not employed. *Cerastium caespitosum* Gilib. is used instead of *C. vulgatum*. *Sagina ciliata* is made a sub-sp. of *apetala*, *leptoclados* a sub-sp. of *Arenaria serpyllifolia*, and *gothica* a sub-sp. of *ciliata*. So too with *Cochlearia officinalis* and *alpina*, *Cardamine hirsuta* and *sylvatica*, *Vicia tetrasperma* and *gracilis*, *Limonium vulgare* and *bahusiense*, *Gentiana campestris* and *baltica*, etc., etc. The practical difficulty is that none of these sub-sp. are included in the " Kew Index " or its " Supplements."

Becherer, A. Botanische Beobachtungen im Val Formazza. In Ber. Schweiz Bot. Gesellsch., heft xxxvii., 1928. Here it is cheery to see that he uses *Statice* rather than *Armeria*. Karsten (1880-3) is chosen as the authority for *Sagina Saginoides*. Becherer rejects the interpretation given in the *Cambridge Flora* for this species. *Silene vulgaris* (Moench) Garcke is used instead of *S. angustifolia*.

Becherer, A. Systematik und Floristik der Gefässpflanzen. Separat. Bericht. Schweiz Bot. Gesellsch. heft xxxvii., 126, 1928, a publication formerly edited by Dr A. Thellung.

Becherer, A. *Fedde Rep.* xxv., 215-8, 1928. Combinationes Novae vel Neglectae. Includes *Carex hirta*, var. *sublevis* Hornem. Fl. Dan. xxix., p. 7, t. 1711, 1821 = *C. hirtaeformis* Pers. *Chenopodium polyspermum* L., var. *acutifolium* (Sm.) Kosteletzky Cl. Anal. Fl. Bohem., 39, 1824, precedes Gandin Fl. Helv. ii., 259, 1828.

Belgique, Bulletin de la Societe Royale de Botanique de. Vol. lx., deuxième serie, tome 10, fasc. 1, 1927, contains a memoir of E. Durand. R. Naveau has a paper on Musci Bequaerti. P. Ledoux and R. Naveau report on the Botanical excursion to Antwerp and its environs. M. Beeli gives his fourth paper on the Mycological Flora of the Congo, and W. Robyns describes new species of *Securidaca* from the Belgian Congo. In fasc. 2, 1928, M. J. Houzeau de Lehaie has a note on the variations of the Belgian *Ophrys*. L. Magnel has a paper on the indigenous species of *Luzula* with the contrasting features given. The var. *gracilis* (Rost.) is distinguished from the type as "Tige grêle de 2-3 dm. seulement; feuilles basilaires longues seulement de 5-10 cm. et larges de 3-5 mm." in a dense rosette, whereas the type has "Tige de 4-8 dm., robuste, dressée; feuilles basilaires atteignant jusqu'à 50 cm. de long, sur 8-12 mm. de large." Of *Luzula campestris* he has 3 varieties, one of which, *collina* G. J. W. Mey, is doubtless British. It is more slender than *multiflora*, has only 2 or 3 spikeheads (not 3-6), the cauline leaves are 2-3 (not 3-5) and they are only 2 mm. (not 2-3 mm.) broad at the base, besides being shorter. Of *multiflora*, the vars. *congesta*, *pallens* (A. & G.) and *pallida* Magnel are given. An interesting account of three days' botanising near Mons by the Society occupies 20 pages. It may be worth while alluding to the finding there of *Scorzonera humilis*, *Orchis maculata* and *O. latifolia*. W. Robyns also gives an account of two species of Californian *Hemizonia*—*H. fasciculata* and *H. pungens* which occur in Belgium, the first at Ixelles and the second at Louvain. He thinks they are introduced in corn. The former is not spinous. He gives good descriptions of the two species. In Britain both are found as grain aliens.

Bennett, Arthur. Notes on the genus *Potamogeton* of the "London Catalogue" in Journ. Bot. 329, 1926. He notes that *venustus* is accidentally omitted. I have included it in my *List*. He thinks *varians* should be included as a variety. *Perfoliatus* has, he considers, three varieties in Britain—*macrophyllus* (Blytt), *gracilis* C. & S. (W. Sutherland, Inner Hebrides), and *pseudodensus* A. & G. (Loch Brotachan, S. Aberdeen). The remarks under *vaginatus* are not quite understandable. It is quite clear that *P. suecicus* does occur in both Zetland and Orkney.

Blow, T. Bates, F.L.S. Charophyta collected in Madagascar. Paper by Mr James Groves in Journ. Linn. Soc., 125, 1928. Our veteran member visited this large island in 1924 and made a collection of 384 dried specimens, under 104 numbers. Ten of these were species of *Nitella*, including *N. mucronata* Miq., nov. var. *nobilis* J. Groves; *N. inequalis* Groves, nov. sp.; *N. graciliformis* Groves, nov. sp.; *N. tenuissima*, nov. var. *callesta* Groves; *N. sphaerocephala* Groves, nov. sp.; *N. vermiculata* Groves, nov. sp.; *N. leptodactyla* Groves, nov. var. *megaspora* Groves and *N. Blowiana* Groves, nov. sp., "the most remarkable and distinct species in the collection." Four of these new species, including *Blowiana*, are beautifully figured. His chief object in visiting Madagascar was to investigate under tropical and malarial conditions the alleged larvicidal properties of Charophyta. The conclusion he arrived at was that this group does not possess any larvicidal properties.

and the experiments, carried on for over a year, show that his conclusions are quite warranted.

Bohemica Acta Botanica. Vol. i., 1922. Eds. K. Domin and J. Podpera. Byblidaceae, a new Archichlamydeous family from Australia, contains the genus *Byblis* with its species *B. liniflora* Salisb. Formerly included in the Droseraceae, its affinities are with the Pittosporaceae. Ad Bryophytorum Haemi Peninsula cognitionem additamentum, J. Podpera. Addit. Flora Dalmatia, L. Celakovsky fil., in which we notice that the generic name *Centaurium* is used, but the dates of the publication of the names are not given. A new Violet of the environs of Bratislava, F. A. Novak. This area is very rich in violet forms, no fewer than 40 different ones being found. The new one is allied to *odorata*, var. *pubiscapa* Novak. A new Umbeliferous genus, *Maidenia*, from New South Wales, is named after J. H. Maiden, the author of the Monograph of *Eucalyptus*. There are many other interesting papers. Vol. ii., 1923. Flora von Montenegro, J. Rohlena, with a new species—*Meum Vandasii* = *Ligusticum Vandasii* Rohl. Lichenes Slovakiae, J. Suza. Prof. Domin contributes a paper, "Is the Evolution of the Earth's Vegetation tending towards a small number of Climatic Formations." Vol. iii., 1924. Lichen Add. Bohemiae. A new genus of Cruciferae—*Drabella* with a figure of the species *thylacocarpa* Nabelek, and a new species of *Euphorbia—serpentini* Novak, from the Serpentine mountain, Zlatibor, 900-1100 m., in east Serbia, with figure. Plants of Montenegro, J. Rohlena. Three new Roumanian plants, J. Klástersky—*Knautia Dominii* from Mount Boresco, 1600 m.; *Festuca varia*, sub-sp. *auriculata* Kl., and ×*Veronica mixta* Kl. (*V. alpina* × *bellidioides*). Vols. iv. and v., 1925-6. Lichenes Slovakia, A. Hilitzor. Flore Mycologique Bulgarie, J. Klika. Vols. vi. and vii., 1927-1928. Introductory Remarks to the fifth International Phytographic Excursion through Czecho-Slovakia, K. Domin. A most complete and erudite paper in which 37 endemic species are mentioned. Flora of the Pollaner Berge, J. Podpera. Relations of the Tatra Mountain Vegetation to the Edaphic Factors of the Habitat, K. Domin. This, a highly valuable study, was read at the International Botanical Congress at Ithaca in 1926.

Botanical Magazine. Vol. cliii., pt. 2, t. 9137, 1928. Figures *Erythraea scilloides* Chaub. and gives its history. Dr Stapf agrees with my identification of the Azorean species but thinks that the colours, white and pink, are not sufficient to warrant varietal distinction. He says the Azorean plant is sometimes pink (*portensis*). If so, it is a strong argument for its being dropped. The flora of the Azores has so many examples of endemics in which the differences are but slight that it would be well if Mr Marsden Jones would cultivate side by side the plants from Brittany and the Azores to see if they breed true. It is regrettable that there should be discordant views on the nomenclature. Mr Sprague, in most definite terms, says the correct generic name is *Centaurium*, as I long ago pointed out, but Dr Stapf still uses *Erythraea* a much later name, although he cites *Centaurium scilloides* Dr. (from *Rep. B.E.C.*) in synonymy.

BOTANISKA NOTISER, 203, 1928. Neue adventive *Chenopodium* aus Schwede, *Chenopodium blomianum* Aell., by Paul Aellen.

BOTANISK TIDSSKRIFT, 1928. This has a picture of the memorial to Warming.

BOWER, F. O., LL.D., F.R.S. THE FERNS (FILICALES) TREATED COMPARATIVELY WITH A VIEW TO THEIR NATURAL CLASSIFICATION. Vol. iii. THE LEPTOSPORANGIATE FERNS. Pp. viii., 306, tt. 177. Cambridge University Press, 1928; 30/-. This handsome volume completes a prolonged study of the Filicales and Dr Bower is warmly to be congratulated on being able to give such a valuable contribution to our knowledge of this remarkable class of plants. Owing to the generosity of the Carnegie Trust he has been able to illustrate this, the concluding volume, with 174 figures. The Leptosporangiate Ferns, as Dr Bower says, are the ferns of the present day and were formerly known as the Polypodiaceae. The nomenclature adopted is that of Christensen's "Index Filicum." Among the British Ferns mentioned are *Pteridium*, although *Eupteris* Newman is said by competent pteridologists to have weightier claims for adoption. Dr Bower says the Bracken is one of the most successful of all vascular plants as shown by its cosmopolitan distribution and gregarious habit. In the Gymnogramnoid Ferns are included Brown's *Cryptogramma*, the Parsley Fern. The Genus, *Adiantum*, has 184 species of which one, *Capillus Veneris* is British, and it is the only British Adiantum Fern. Among the Dryopteroid Ferns, *Woodsia* is a British example, and there is the complex section (Aspidaceae) which includes *Dryopteris* into which *Phegopteris* Fée is now merged. These are characterised: (1) Sori with reniforum indusium, including *Dryopteris* with 741 species, and (2) Sori with peltate indusium, including *Aspidium* Swartz, with 138 species, and *Botrychium* Roth, with 112 species. The Asplenioid Ferns include *Athyrium* Roth and *Ceterach*. We are glad to see that the name, *Phyllitis*, which is put among the Blechnoid group, is used, but is not Hill, *British Herbal*, 1756, the correct author rather than Ludwig? Among the Genera Incertae Sedis is put *Cystopteris* and he considers that the balance of evidence is in favour of its ranking with the Cyatheoid rather than with the Davallioid derivation: in fact that it sprang from a superficial ancestry and with special relation to the Woodsioid and Dryopteroid Ferns. *Azolla* Lam. and *Salvinia* Adans. are also among the Genera Incertae Sedis and, despite their pronounced heterospory, there can be no doubt of their Fern nature. Dr Bower includes an able chapter on the Evolutionary Bearing of the Results, a good index and valuable bibliographies for the various chapters. The volume is printed with that clear and well arranged typographical details which we are accustomed to in the publications of the Cambridge University Press.

British Association. Report for the 98th year of the meeting at Glasgow. Pp. 704. Annual Subscription, £1. President: Sir W. H. Bragg, K.B.E., D.C.L., LL.D., F.R.S. President of Section K, Botany: Prof. Dame Helen Gwynne Vaughan, D.B.E., D.Sc., LL.D. The illness, alas, which has terminated fatally, of Prof. Yapp, who was to have been President, and the loss of Dr Daydon Jackson, W. F. C. Newton, Rev. E. F. Linton, R. Miller Christy and Sir Harry Johnston were touchingly alluded to. Prof. Gwynne Vaughan's able address was on Fungi of which she is such a brilliant exponent. The sectional meetings were well attended and important papers were contributed. Among these, Dr R. N. Buchanan read a paper on the Decay of Stone Buildings and Monuments, a biological problem. Micro-organisms were almost invariably found in material from the decaying surfaces. They were of three different kinds—bacilli, yeasts, and moulds. Dr T. W. Woodhead treated of the Forests of Europe and their development in early post-glacial times. Our late member, Dr W. J. Smith, gave a valuable paper on Bracken and Heather Moorland. He says the displacement of heather by *Nardus* and *Molinia* is a serious menace to forestry, grazing and game. Sir John Stirling Maxwell lectured on Forestry in Scotland, Past, Present, and Future. The excursions were well attended and included the Glasgow Parks, the Ben More estate, the memorial to Prof. I. Bayley Balfour, Ben Lui, and the Loch Katrine afforestation scheme. At the Association Meetings the "Eastern Morning News" estimated that 2,000,000 words were used in the 275 papers read, and another million were used in the discussions. Even this was not enough for some people since a later Oliver "wanted more." Sir Oliver Lodge complained that the meetings had suffered from the time-table.

Brown, A. Samler, F.R.M.S., and G. Gordon Brown. The South and East African Year Book and Guide, with Atlas and 221 Diagrams. 35th edition, pp. liv., 908, 1929. Prepared for the Union Castle Mail Steamship Company. This is a marvellous compilation which supplies well selected and wide ranged informative notes on all the varied subjects which travellers need. It is specially prepared for those who wish to visit S. Africa as members of the British Association on the occasion of its 99th year which is to take place under the Presidency of Sir Thomas Holland, K.C.S.I., F.R.S., in July and August at Cape Town and Johannesburg. The meeting takes place simultaneously with the 27th meeting of the South African Association for the Advancement of Science, their President being the Hon. Jan Hendrek Hofmeyr, M.A. An Atlas of 64 pages is a most valuable adjunct. No fewer than 36 different routes are described, and for the East African Section 17 routes are detailed. Most valuable information is given as regards hotels and tariffs, clothing, railway and steamboat regulations and the hundred and one points which are needed. Farming, Timber and Forests, Live Stock, Mining and Minerals, Climate, Means of Locomotion are headings which speak for themselves, while a clear typed index extends to 32 pages. It may be added that the distance from London to Cape Town is 6181 miles, Durban 6992, Las Palmas 1697, and Teneriffe 1694.

Brief but excellent notes are given on the ports of call and these include Gibraltar, Marseilles, Naples, Genoa, Port Said, Aden, Mombasa, etc. The Guide is so good that no traveller can afford to be without having it for reference. A good account of the Fauna is included.

Britton, C. E. Notes on some Minor Varieties of British Plants in Journ. Bot. 324, 1926, and part ii., *l.c.*, 41, 1928. These are for the greater part given in the systematic parts of our Reports. Those treating of the Veronicas are especially useful.

Bruxelles, Bulletin du Jardin Botanique de l'Etat. Vol. xi., fasc. 1, pp. 154, May 1928, is devoted to Tentamen Monographie Vangueriae Generumque affinum by Walter Robyns, Sc.D. This includes a new genus appropriately dedicated to our correspondent, Mr J. Hutchinson of Kew, with two species, *Hutchinsonia barbata* (with figures) and *H. glabrescens*. Other new genera are *Pygmaeothamnus* with 4 species and *Eriosemopsis* with one species. *Fadogia* Schweinfurth has 45 species of which 14 are new. *Fadogiella* (4 species), *Tupiphyllum* (12 species), *Pachystigma* (10 species) and *Rytigynia* (77 species) are also new genera. Vol. xi., fasc. 2, pp. 155-359, 1928. New genera—*Plectromella* (one species), *Vanguereopsis* (18 species), *Temnocalyx* (5 species) and *Perakanthus* are described by M. Robyns as well as 26 species of *Vangueria*, 2 of *Lagynias*, and 6 of *Ancylanthus* Desf. A valuable contribution to science.

Burtt Davy, J., and L. Chalk. The Collection and Preparation of Herbarium and Timber Specimens. Pp. 28, 1927. Imperial Forestry Institute, University of Oxford. A most useful little pamphlet. We append what the authors give in such a clear manner on the selection of specimens:—

Selection of Specimens.—Many synonyms and wrong identifications of timber trees are traceable to specimens which are incomplete or badly chosen. Specimens should be selected with care, not picked at random. They should be normal and representative of the species or particular variety or form, not abnormal specimens. Leaves, etc., which are damaged by insects or other agencies should be avoided. To obtain typical specimens may necessitate examination of a tree in some detail.

Certain species are more variable than others; some species show great variation on one and the same tree; for example, the leaves of *Chlorophora excelsa*, *Pappea capensis*, *Acacia melanoxylon*, *Ulmus nitens*, etc., on young trees and on coppice-shoots of the same tree, vary from the normal mature form so much that when collected separately they have been taken to represent distinct species. In such cases series of specimens illustrating the range of variation should be collected.

When a tree growing in one locality or habitat differs from the same species (or what has been considered such) in another locality or habitat, (*e.g.*, *Lophira* from the rain-forest and from the savannah-forest areas), specimens of both forms should be collected.

Different individuals of the same species should be studied closely in order to ascertain which characters are constant and reliable guides to the identity of that species, and which characters are variable and unreliable. This is an important line of investigation, and one which is essential to a clear understanding of the component species of the forest; it can be carried out satisfactorily only by the Forest Officer on the spot. His observations in the field should be recorded by means of specimens deposited in the herbarium.

The Parts of a Tree required for a Complete Specimen.—A complete herbarium specimen should consist of the following parts:—

(1) A flowering-branch about 15 in. long, with inflorescence in place; when the latter is too large it may be divided between two or more sheets, if so marked that the relative position of the separate parts is clearly indicated. Both flower-buds and mature flowers should be collected. In the case of unisexual species it is important to have the flowers of each sex, and these must be carefully looked for; where the sexes are in separate flowers, both may occur on the same tree (species monoecious); or each of two trees may bear flowers of a separate sex (species dioecious) or a tree may bear flowers of one sex one year and of the other sex another year (e.g. *Pycnanthus kombo*).

In addition to those required for the mounted sheet, about twenty-five additional flowers should be obtained in order to provide ample material for dissection and study. These can be dried in a separate specimen cover, but should bear the same collector's number (see paragraphs 4 and 7).

(2) Fruits and Seeds. No specimen is complete without both flowers and fruit. A fruiting branch 15 in. long should be collected; it is just as important as a flowering-branch, and many species cannot be named in the absence of fruits. A supplementary supply of fruits and seeds for the carpological collection, in addition to those required for the herbarium sheets, should be obtained.

To know whether a species is regenerating naturally, one must know what its seedlings are like. Therefore seed from the tree which furnishes the herbarium specimens should be collected and germinated in the nursery; specimens of the seedlings showing cotyledons, etc., can then be pressed for the herbarium; some should be "grown on" in order to demonstrate any possible changes in size, shape or outline of leaf, etc.

(3) In many cases it will be found that the leaves on the flowering specimen are not of full size; if neither flowering nor fruiting specimen bears full-sized leaves, a branchlet showing the latter should be obtained.

(4) Bark: a characteristic piece of bark, about 6 in. by 3 in., is a useful aid to identification in some cases; or a good photograph of the bark, taken with the camera placed at a distance of about 6 ft., may be substituted for the actual bark-specimen.

(5) Wherever it is practicable to do so, a wood specimen should be taken. In all cases where timber specimens are obtained for study or museum purposes, botanical specimens should be secured from the same tree, that the identity of the species providing the wood may be verified.

CALIFORNIA UNIVERSITY. PUBLICATIONS OF. The greater part of the voluminous publications relates to Algae. Other papers include Cytological Features of *Nicotiana sylvestris*×*tabacum* hybrids by T. H. Goodspeed and R. E. Claussen; Chromosome Number and Morphology in *Nicotiana* by M. L. Ruttle; Inheritance in *N. tabacum* by R. H. Chapman and T. H. Goodspeed; New Rhodophyceae from the Pacific Coast of North America by N. Lyon Gardner; The Pleistocene Flora of Rancho la Brea by F. H. Hurst; On a collection of Myxophyceae from Fukien Province, China, by N. L. Gardner; A Cytological Study of *Puccinia coronata* C.D.A. on Banner and Cowra Oats by M. L. Ruttle and W. P. Fraser; The Botany of *Ephedra* in Relation to the Yield of Physiologically Active Substances by G. W. Groff and G. W. Clark; Interspecific Thyhidization in *Nicotiana* by R. E. Claussen; A Revision of the Genera *Chantransia*, *Rhodocorton* and *Acrochaetium* by K. N. Drew; A Working Hypothesis for segmental interchange between Homologous Chromosomes in Flowering Plants by John Belling, and The Life-History of the Brown Alga, *Egregia Menziesii*, by Margaret E. Myers.

CAMBAGE, R. H. Origin and Development of Portion of the Australian Flora. Australian Association for the Advancement of Science, Hobart, January 16. His conclusions are that there is meagre evidence for the direct land-connection with the African continent. Except for a land-connection between North-Eastern Australia and islands to the north, perhaps so late as pliocene time, Australia has long been isolated from the rest of the world. There appears to be more evidence in favour of a former land-connection between Antarctica and perhaps New Zealand and Australia, than between Africa and Antarctica.

CARDIFF NATURALISTS' SOCIETY, REPORT AND TRANSACTIONS. Vol. lx., 1927, pp. 134; 10/6. This excellent publication gives an account of the Diamond Jubilee Celebrations at which I represented our Society as a delegate. It contains an illustration of the Bronze Memorial Tablet to Robert Drane, who discovered a new species of Vole. There is a good account of his life-work, and a description of the unveiling of the Memorial by the President, Mr R. W. Atkinson, B.Sc. The Society has 658 members. There is a good photograph of the officers and delegates at the Jubilee meeting which was carried out with great success. Mr Proger gave a very interesting broadcast wireless address, and Colonel Sheen lectured on the "History of the Society." The reception by the President, T. W. Proger, the dinner and the conversazione were brilliantly successful, and there were pleasant excursions to Caerleon and to Llandaff Cathedral.

CLEMENTS, FREDERIC E. Researches on Ecology. Carnegie Institute Year Book, 1926-7, pp. 305-339. The energy and ability of Dr F. and Mrs E. Clements are well shown in this terse and vivid publication. The results of very numerous experiments are given. For instance, under the Experimental Morphogeny of *Plantago lanceolata*, some illuminating results have been obtained. Two similar and typical plants were trans-planted from a roadside to a garden in 1925. They were left without cultivation, but the seedlings grown from them in 1926 were tilled and watered and subjected to considerable competition. The adults became greatly "overgrown" reaching a height of nearly thrice that of the field plants and bearing dense rosettes of very large leaves. Some of the plants bore a central spike with a cluster of small ones at the base, others bore a cluster of leaves.

CLEMENTS, FRED. E., and EDITH S. FLOWER FAMILIES AND ANCESTORS. Pp. 156, with 64 illustrations. H. W. Wilson & Co., New York, 1928. In this small book Dr and Mrs Clements have given the Family Tree in simple language and with a commendable absence of technical words from which some botanical works, even on Ecology, can hardly claim credit. This plant-genealogy is arranged according to a chart method which was introduced in 1900 for the purpose of emphasising the family types as a medium of identification and to reduce the difficulties with which beginners are met with when they are faced with a clavis or key. The authors have used this in the various works published by them since that date. Its primary purpose is to develop in students the spirit of enquiry and to enable them to find their way among the flowers in the garden and field and to refer them to the proper families. The names of the chapters are suggestive—How Buttercups became Lilies—and Roses and Geraniums. And how Geraniums became Mints and Pinks and Buckwheat, and how Roses became Cacti—and Walnuts and Maples and Sunflowers and Dandelions. The Evolutionary Sceptics—for even in these days such exist—may scoff and doubt, but they should read these chapters and then see if their doubt remains. The authors hold that the story of increasing efficiency is one of progressive specialisation, and the highest and most recent of flowers are those most specialised and correspondingly efficient in seed production. They hold that the Buttercup order, comprising Buttercups, Anemones, Larkspurs, Magnolias, etc., contain the simplest and lowest of flowers in the usual sense, while Snapdragons, Lobelias and Orchids are among the most specialised and highest of flowers pollinated by insects. At first thought (and might not they add on second thoughts too) they say it may well seem incredible that the buttercups are the simplest and oldest of flowers and must be the ancestors of all the others. They do not occupy that place in Engler's system, but it is not inconsistent with the sequence adopted by De Candolle and Hutchinson—but, like the Scotsman, one has one's doots—so much of plant genealogy is conjecture—even the individual family-tree has some strange ramifications, but it is refreshing to be told exactly what happened in the early days of the world's history, and with no uncertain sound. For instance, the calyx and corolla of primeval buttercups were the first to know their own minds and to settle upon plants of the Barberry, Larkspur and Water Buttercup which were henceforward to become the preferred number for the vast majority of their descendants. Definite charts, however, are given both for the flowering plant and for the insect and wind-pollinated lines of descent from Geraniums to Goosefoots—a long, long way.

as it is to Tipperary, but the authors have given with great clarity and forcefulness their ideas, and anyone who reads this unconventional work cannot fail to have his intellect stimulated by the many themes brought forward. They conclude by making an urgent and sadly wanted appeal to preserve from destruction the flowers of the field which, in America, as in Britain, stand in great jeopardy. Therefore they urge that every school should have its wild garden. To those who possess the various books treating of Plant Classification, this compact and pleasing volume will form a valuable companion, since it explains so well some of the reasons which influence systematists in plant genealogy. Few authors have given more time and labour to Botanical research and one looks forward to receive further contributions.

COLEMAN, Mrs EDITH. On the Pollination of the Orchis, *Cryptostylis leptochila* F. V. M., by the wasp, *Lissopimpla semipunctata* Kirby, with photos. Victorian Nat., 333, 1928.

CUNNINGHAM, LILY M., B.Sc. Observations on the Structure of *Zygophyllum Fabago* in Trans. Bot. Soc. Edin., xxix., pt. iv., 352-361, 1927.

DAHLSTEDT, H. De Svenska arterna av Slaktet. *Taraxacum* in Kungel Svenska Vetenskapsakademicens Handl. Tredje serien. Band 6, No. 3, Stockholm, 1928. This important paper gives Latin definitions of (iii.) DISSIMILIA with two species, one of which, *T. dissimile*, is found in Britain. (iv.) PALUSTRIA with 7 species, of which *T. balticum* has been identified by him as British. (v.) CERATOPHORA with 6 species, of which we have no representative recorded. (vi.) ARCTICA with two species, neither represented in Britain, and (vii.) GLABRA with three species, also unrecorded for Britain. There are sixteen beautifully coloured plates.

DANSER, B. H. The Nepenthaceae of the Netherland Indies, in Bull. du Jardin Botanique de Buitenzorg. Ser. iii., No. 9, pp. 249-438, May 1928. In this able contribution our valued Hon. Member has described 51 species of this extraordinary group which extends westwards and southwards to Madagascar, eastwards and southwards to the Isle of Pines, south-east to New Caledonia, northwards to the Khasi Mountains and Southern China. They are absent from the African mainland and America, and in Australia they are limited to the Cape York Peninsula. Dr Danser enters into a most interesting and suggestive discussion on their distribution of which many maps illustrating it are supplied. He considers that the genus is juvenile and that the distribution may extend. At present one mountain has 25 out of the 65 species. He thinks that they may have originated in the Asiatic continent during the last part of the Cretaceous period. He seems to favour the hypothesis of Wegener who holds that formerly Africa, Madagascar and India had been parts of one continent, which broke into parts that floated away in different directions, and that Madagascar was situated originally between Africa and the southern part of India near Ceylon. There is a copious list of the literature cited. He agrees that the most widely distributed species should be known as *Nepenthes mirabilis* (Lour.) Druce (in Rep. B.E.C., 637, 1916) instead of *N. Phyllamphora* Willd.

DEVONSHIRE. Transactions of Association for the Advancement of Science, Literature and Art. Vol. lxi., 73-85, 1927. Botany, edited by G. T. Harris. Contains 270 records, including *Chrysosplenium alternifolium* from Tiverton. The *Pinguicula vulgaris* from Teigngrace, recorded in the seventeenth Report, turns out to be *P. grandiflora* which must have been intentionally introduced. *Mimulus Langsdorfii* is more correctly *M. guttatus* DC. *Scutellaria galericulata* × *minor*, a rare hybrid, is given for Dartington by the Rev. Keble Martin. Vol. lxii., pp. 81-92, 1928. Botany, edited by G. T. Harris. Among the plants sent in were *Polygonum maritimum* from N. Devon and *Brassica adpressa* (properly *B. incana*) from E. Devon. The statement about *Cynosurus echinatus* and *B. adpressa* is misleading. Both have been found repeatedly in Britain as any reader of our Reports knows. Among other plants mentioned is *Teucrium Chamaedrys* from a hedgerow near Swym Bridge. *Pimpinella Saxifraga*, var. *nigra* Mill is almost certainly an error—there is no clear evidence of its occurrence in Britain. *Cnicus* is erroneously used for *Cirsium*. *Aconitum Napellus* from Tiverton district is *A. anglicum*. *Polygonum mite* is the better name to use for *laxiflorum*. *Vicia gracilis* from Tormohun is an interesting record. The true *Sedum Telephium* L. is not British—our plant is *S. purpureum*. *Carthamus tinctorius* is said to be becoming established along the Dart and the Exe. *Sausserea discolor*, new to our List, is reported from St Budeaux. There are some interesting historical notes.

DRUCE, G. CLARIDGE. THE BRITISH PLANT LIST. Pp. xli., 154, 1928. T. Buncle & Co., Arbroath; to members, 3/6; interleaved in cloth, 5/6. The publication of a second edition of the "British Plant List" is an event of outstanding importance to British botanists, many of whom have used the first edition with the greatest advantage for the past twenty years. To foreign botanists, too, the Oxford List has proved indispensable, and is by them highly appreciated. The numerous additions to the British Flora have long necessitated the publication of a new edition, and Dr Druce is to be very heartily congratulated upon the completion of his arduous labours in connection with its preparation, and also upon the excellence of the results achieved. The special value of the "British Plant List" lies in the fact that it includes not only native plants but the almost equally numerous colonists, established aliens and adventives. Many previous attempts have been made by British botanists to record the alien plants of restricted areas, but only in the "British Plant List" can we readily obtain adequate information respecting the fluctuations of the British Flora as a whole. Dr Druce has made the list as exhaustive as possible and included all plants—whether native or alien—reported on adequate authority as growing in Britain. The List now includes the names of 4246 species, about 2700 varieties, over 500 hybrids and very numerous synonyms. The original habitat of each alien species is indicated and the vice-comital range of distribution of each native species is also given, so that the student of plant distribution will find the work particularly helpful. Comparing the second edition with the first, we note that while nativo species have increased by 350 in the past 20 years, established aliens and adventives have increased by 915. In fact the total number of species other than native is now 2105, while the native species number 2141. The largeness of the additions made in each class since the first edition was published is eloquent testimony to the extent and value of the work done by the members of our society and others during the intervening period, and especially to the zeal and thoroughness evinced by Dr Druce in dealing with the determination of difficult plants and in undertaking the compilation of so large and complete a list. The present edition is a very great improvement on the first and includes many features of especial interest. To most of us the " Index to Monographs and Systematic Papers "—which occupies 16 pp.—will be of the utmost value and will greatly facilitate reference to original papers on critical species. A list of " Abbreviations of Authors' Names " giving also the names in full, will be of considerable use in the essential need for exact citation. To field-workers the detailed particulars respecting the vice-counties of the British Isles—reproduced from Watson's " Topographical Botany "—will be much appreciated. This section gives the vice-comital number and boundaries of each vice-county, and if used in conjunction with an atlas should enable collectors easily to give the correct v.-c. number in writing out their labels. An innovation which greatly adds to economy of effort and increases our pleasure in the use of the book is the explanation given at the foot of each page as to what the various kinds of printed type represent, and also the significance of asterisks and brackets. More detailed information on these and other subjects is given in the very ably written introduction. As one who assisted in the proof-reading the reviewer was somewhat chastened in spirit upon the discovery of a few slight typographical errors in the text. Such inaccuracies are, however, almost inseparable from the publication of a volume containing such an enormous amount of scientific detail and one only wonders that they are not more frequent. The book is well bound, of convenient size, and most excellently printed. By the use of three distinct types of letterpress, ample margins and liberal spacing, the matter is well displayed and most easy to read. The " British Plant List " is indispensable to every serious systematist, and will be warmly welcomed by both British and foreign botanists. We confidently anticipate that to the joy of achievement Dr Druce will now be able to add the appreciation of a large and discriminating number of subscribers and the pleasure of having to meet a keen demand for copies.—W. H. PEARSALL.

EDINBURGH. Transactions and Proceedings of the Botanical Society. Vol. xxx., pt. 1, pp. viii., 61, 1928. Notes on Caithness Plants. Includes *Atriplex glabriuscula*, nov var. *pseudo-calotheca*, from Reiss. This is similar to plants gathered by me in Wigton, etc. A hybrid of *glabriuscula* with *maritima* is mentioned but this needs confirmation. An account of the Scottish Alpine Botanical Club Excursion in 1927 is given by the Rev. J. Marshall Lang Aiken, B.D. *Mimulus moschatus* was found in Glen Lyon.

FERNALD, M. L. The Genus *Oxytropis* in North-Eastern America. Ten species, four being figured, are described, but none of them are British. The North American species of *Anemone* (*Anemonanthea*) number nine, including *A. nemorosa* which is introduced in Massachussetts. See contribution from the Gray Herbarium of Harvard University, No. lxxxii., 1928.

GARDENERS' CHRONICLE, 1928. Price, 6d weekly. 5 Tavistock Street, Covent Garden, W.C.2. Captain Kingdon Ward continues his account of his ninth expedition to Asia—in the Lohit Valley. An illustrated paper on the Mesembryanthemums is continued by Mr N. E. Brown with manifold new species and Selfridgean combinations. Col. Enever Todd continues his Revision of Violas. An account of the opening of the Royal Horticultural Society's new hall is given. It will take some time to get accustomed to its proportions and arrangements. It has succeeded in giving more light to the exhibits. Dr Rayner has important papers on Mycorrhiza in Plant Growth. The Bayley Balfour Memorial at Ben More, with its extensions through the generosity of Mr H. C. Younger, is well described in the leader of September 22. The Rev. Hilderic Friend contributes several pleasing articles on Ancient Gardens and another on the Flora of Rome.

GENEVE, BULLETIN DE LA SOCIETE BOTANIQUE DE. Vol. xix., fasc. 2, pp. 193-344, tt. 4 et 55 vignettes, 1927-8. Ed.: Robert Chodat. Its contents include a new Orchid hybrid, *Nigritella bernardensis*, by Justin Zender. Robert Chodat contributes new plant localities with a figure of a zygomorphic form of *Campanula Scheuchzeri*. A. Eig contributes Notes sur le Genre *Aegilops* of which eight species are described with their varieties. There is an appreciative memoir of Franz Stephani by Gustav Beauverd. Franz Stephani was the author of "Species Hepaticarum," a monograph of the Hepatics of the world in six volumes, 350 Swiss francs. He also described a new variety of *Eleocharis multicaulis*—var. *praecox*, which flowers in May on the margins of the Lac des Peres. Many other new varieties are also described. Vol. xx., fasc. 1, 1928. Contains Esquisse Geologique, Geophysique et Topographique des "Rochers du Coin" in the Haute Savoie, pp. 10-148. W. H. Schoffer. Recherches sur la Sexualité des Champignons, pp. 149-323, with many figures. Justin Zender, La Pavot et son usage chez les Assyriens. Schweinfurth discovered in Egypt in the tombs of the 22nd dynasty paintings of the flowers of *P. Rhoeas*, and the author shows that the opium poppy was in very ancient use by the Assyrians. G. Beauverd has a paper on the polymorphism of *Silene acaulis*, and gives as new varieties *quadriloba* and *patula*, and a new variety, *caerulescens*, of the closely allied *S. excapa* All.

GLASGOW. BRITISH ASSOCIATION MEETING, GENERAL HANDBOOK, edited by J. Graham Kerr, F.R.S., pp. 357, 1928. Botany, by Donald Patton, Ph.D. This treats of the mountain region near the upper area of Loch Lomond, the highest point of which is Ben Laiogh, 3708 feet, the Clyde Valley proper and the shores of the Firth, and forms a readable account of the botanical features of the area. Mr J. R. Lee compiled the account of the Mosses and Liverworts of which he has so good a knowledge, Mr D. A. Boyd the Fungi, Mr George Lunam the Freshwater Algae, and Mr E. J. A. Stewart the Lichens. The volume is portable and useful, and is accompanied with capital Topographical and Geological maps.

GODFERY, Col. M. J. Classification of the Genus *Ophrys* in *Journ. Bot.* 33, 1928.

GRAHAM, R. J. D. Studies in Wild Rice. Trans. Bot. Soc. Edin., 349, 1927. Wild and cultivated forms differ in the amount of water taken up during germination, the amount in cultivated forms being greater.

GRAHAM, R. J. D., and L. B. STEWART. Trans. Bot. Soc. Edin., November 26, 1926. Regeneration from roots of *Anchusa*. In raising plants from root-cuttings the practical horticulturist recognises two main types of regeneration:—(1) The new shoots arise either from the cut end as in Sea-kale, or (2) as lateral outgrowths as in Horse-radish. *A. officinalis* is like Horse-radish; *A. italica* is similar to Sea-kale.

GUERNSEY. The Report of the Botanical Section of the Natural History Society of that Island by our member, Mrs M. A. McCrea, contains some interesting material. The alien, *Spilanthes leptophylla*, is increasing. *Oxalis incarnata* and *violacea* are pests in the green-houses. The island is being more and more covered with green-houses, so that some good plant habitats will be spoiled.

GUNTHER, ROBERT W. T. FURTHER CORRESPONDENCE OF JOHN RAY, with two portrait half-tone plates, and text figures, pp. 332. Printed for the Ray Society, 1928. This volume was mainly inspired by the discovery in the Bodleian Library of a number of unpublished letters of John Ray. These include those written by John Ray to John Aubrey and to Edward Llwyd. There is a valuable chronological table of Ray's letters given in the two volumes of correspondence issued by the Society in 1848, and those given in 1928. Then come two short lives of John Ray and a view of Black Notley Church where he lies buried. Ray wrote 17 letters to Peter Courthop of Danny, extracts from which are printed. The names of several Cambridge friends of Courthop are mentioned in John Goodyer's copy of Ray's *Catalogue of Cambridge Plants*, published in 1660. I have the original list, which was published in *Journ. Bot.*, 76, 1912, with Corbyn's List of Cambridge Plants, dated November 4, 1656, and May 1657. In the Danny letters, dated April 28, 1662, several plants from near Cuckfield in Sussex are mentioned. One of them written *Herminum* is doubtless a misreading for *Horminum*. It would be very desirable to have published the list of plants (p. 39) found near Gamlingay. There too he says they have added 46 plants to the Cambridge Catalogue. On p. 23 a letter from Ray states that at Aldeburgh " the Sea-pea is so plentiful that 100 combs or half-quarters of pease were grown there, he fails to find in them the bitterness of taste assigned to them by Gerard." The fourth chapter is devoted to Ray and the Royal Society, the fifth chapter to letters to Martin Lister, the sixth chapter to letters to Tancred Robinson, the seventh chapter to those to John Aubrey. The ninth chapter is the correspondence between Ray and Lhwyd. This contains many references to plants. In the foot-note on p. 280 under *Geum*, *Saxafraga* has dropped out. One or the other, or indeed both, grow at Killarney. The tenth chapter gives particulars of " The Lost Letters of Ray to Lister and Tancred Robinson." The " Combined Index " is very useful as the matter in Ray Lankester's volume of 1848 is also inserted. The whole volume comprises a valuable addition to the Life, Letters and Correspondence of the great botanist.

HERON-ALLEN, EDWARD. BARNACLES IN NATURE AND IN MYTH. Pp. 180, tt. 31. Oxford University Press, 1928; 15/-. In November 1926 the author gave a very good lecture, illustrated by slides, before the Ashmolean Natural History Society of Oxfordshire on the Barnacle when, under my presidency, by a curious coincidence, Mr B. W. Tucker and the Rev. C. R. Jourdain were present. They were two out of the five Englishmen who have actually seen the nests of the Barnacle Goose in Spitzbergen. In this neat and clearly printed volume the author dilates upon the subject, tracing the origin of the myth, which has a hoary history of 3000 years. Even in the eleventh century, a Cardinal Bishop of Ostia observed that birds can be produced by Trees as " happens in the Island of Thilon in India," and described the birds when full-fledged bursting from the fruit like an apple! So too Geraldus Cambrensis in 1187 says after his visit to Ireland in the reign of Henry II., that " Barnacles are like marsh geese but somewhat smaller. They are produced from fir-timber tossed along the sea, and are at first like gum. Afterwards they hang down by their beaks as if they were a seaweed attached to the timber. Having thus in process of time been clothed with a strong coat of feathers, they either fall into the water or fly freely away into the air. I have frequently seen with my own eyes more than a thousand of these small bodies of birds hanging down on the sea-shore from a single piece of timber, enclosed in their shells and already formed. They do not breed and lay eggs like other birds, nor do they ever hatch any eggs, nor do they seem to build nests in any corner of the earth, hence bishops and religious men in some parts of Ireland do not scruple to dine off these birds at the time of fasting, because they are not flesh or born of flesh." Giraldus, on account of the accuracy and truthfulness of his observations, must be a worthy ancester or some of the politicians who have made that Island their own. The extraordinary tale went on through the ages. The word Barnacle is to be first found in a Caxton (*The Myrrour of the World*). Albertus Magnus (*De Animalis Historia*, 1478) says he had seen the particular goose lay its eggs. Later on in the *Orbus Sanitatis* of 1491 there is a figure of a tree whence the birds are sprouting, and William Turner, the father of British botanists, dares to believe this myth himself and to persuade others to do so. Neither Dodoens, Clusius nor Tabernaemontanus mention it, but it is revived by both Pena and Lobel with even more graphic figures. They say they have seen the goose shells not only from Scotland but in the Thames, and their statements helped to completely impose on Gerard in whose *Herbal* of 1597 there is a full support of this extraordinary myth and a strange illumination of credulous folly. Fabius Colonna in his *Phytobatanus* of 1592 refutes the bird-theory and shows the shells are of marine origin. Mr Heron-Allen continues the history in a most complete and entertaining manner. He has 300 book references and the figures are well selected from these authors to illustrate this extraordinary delusion which persisted through long centuries. He is to be greatly congratulated upon preparing so scholarly and so entertaining a volume.

HOLMBOE, Jens. Raevebjelden (*Digitalis purpurea* L.) og dens rolle i norsk natur og folkeliv. Nyt. Mag. fur Naturvidensk, 193, 1927. An excellent map shows its distribution in Norway, which is entirely on the western side. It may be remembered that, although it occurs in Orkney and the Hebrides, it is apparently absent from Zetland.

The Vascular Plants of Bear Island (with Olaf Hanssen, *l.c.*, 211). This island, which lies between Norway and Spitzbergen, has 55 species and 2 hybrids. Seven species are due to Hanssen's work in 1923. V. Summerhayes and E. Elton on the Oxford University Expedition in 1921 added *Draba arctica*. *Alopecurus alpinus* Sm. was one of Hanssen's discoveries as were *Arctophila fulva* and *Dupontia Fisheri*. There are four Salices. *Sagina intermedia* Fenzl is found but neither *procumbens* nor *Saginoides*. *Cerastium alpinum* is very variable, but *C. nigrescens* Edmondst. (the correct name is used) does not appear to occur, whereas in Unst, where it grows, *C. alpinum* is absent. *Cochlearia groenlandica* occurs as does *Saxifraga Hirculus*, *cernua* and *rivularis*. The author rightly thinks that *S. groenlandica* L. should be retained as a species, but this is not the plant so recorded in Britain. It is an extremely interesting paper.

Mura (*Potentilla Anserina* L.) og dens bruk som mat Nyttig Plante i Aeldre og Nyere Tid. Svensk Bot. Tids., 160, 1928. Lightfoot (*Fl. Scotica*) says in Tiree and Col in times of scarcity the roots are used for food—they taste like parsnips. A figure of the root system is given, and the etymology is supplied.

HORTICULTURAL SOCIETY, JOURNAL OF ROYAL. Edited by F. J. Chittenden. Vol. liii., pt. 1, pp. lxxix., 199, January 1928. Contains papers on the gardens at Campsea Ashe by the Viscount Ullswater, the chief features of which are the ten majestic cedars, the tallest of which measures 106 feet. The largest in girth at five feet from the ground is 21 feet 4 inches, the smallest 15 feet 4 inches. Good illustrations of these are supplied as well as one of the beautiful terrace walk. Dr C. H. Ostenfeld's Masters Lectures of 1927 are printed and include "The present state of knowledge of Hybrids between species of Flowering Plants," an erudite and valuable statement, especially from the cytological point of view. "Hardy Heaths" was the subject of a paper by Mr D. Fyfe. He alludes to *Erica* × *Darleyensis* = *E. mediterranea hybrida* which occurred at Darley Dale in Derbyshire. Oddly enough I paid a visit to this neighbourhood on the statement of some schoolgirls who claimed that they had found growing wild on the Derbyshire moors some plants which included *Pernettya* and *Rhododendron ferrugineum.* On the contrary these plants grew in a nursery on the moors, being planted in regular rows. ×*E. mediterranea* was also there. Proper praise is given to *Erica ciliaris.* Many varieties of *Tetralix* and *cinerea* are alluded to, and much valuable information is given as to their cultivation. Some attractive illustrations of plants in a rock-garden at Camla Felbridge are given in his account of that place by Mr F. W. Millard. Among these is one of *Lupinus lepidus,* a delightful Californian Lupine. Mrs S. K. Garnett Botfield describes her garden near Albrighton which Lady Dartmouth took me to see recently. The writer has not a bit over estimated its beauty. Mr Pettigrew discourses on "Municipal Gardening," and our own valued member, Mr J. Fraser, whose industry is unceasing, gives an article on "Willows Suitable for Gardens." What he does not know about them is not worth knowing. We may here allude to Mr Fraser's excellent practice of exhibiting dried specimens of our British plants at the meetings of the Scientific Committee. "Hunting Sempervivum" is a very readable chapter by Dr Lloyd-Praeger, since he has visited in his quest Switzerland, Bulgaria, the Balkans, the Canaries and Teneriffe, with the result that he is bringing order out of chaos, for no genus of plants has such libertine tendencies—their hybrids are legion. The Hon. Lady Cecil, C.B.E., contributes a paper on "Plants in our Gardens and how they came there." She says that tradition has it that St Louis introduced *Ranunculus asiaticus* into Europe, and we know that Clusius had it for he deplores that "a domesticall theeve stole foorth of his garden." The popularity of the Ranunculus was attested by the fact that at the end of the eighteenth century there were 800 named varieties. Lady Cecil gives the date of the introduction of *Erinus alpinus* as 1759. Few knowledgable people pay any attention to the supposed introduction of it by the Romans. This article is most readable. Dorothy Gardner gives an account of "The Tradescants and their Times," which is a good biographical sketch of these worthies whose museum is now absorbed in the Ashmolean Museum at Oxford. It is a little hard to say that Ashmole had no interest in the Botanic collections. On the contrary we know at what date he began his "study of simpling" and who was his tutor. There exists in the Bodleian Library a copy of How's *Phytologia* which belonged to him with copious notes on the plants which grew near his residence at Bradfield in Berkshire and elsewhere—a book which I had the luck to unearth among the Bodleian treasures many years ago, and which was one of the special attractions at the recent centenary of the Ashmolean celebrations at Oxford. Mr J. J.

Millais has a good paper on Magnolias. There is an account of the Annual Poppies at Wisley, including *P. Rhoeas*, *somniferum* and *nudicaule*.

Hurst, C. C., Ph.D. The Mechanism of Heredity and Evolution *Rep. Eugenics Review*, xix., pp. 19-31, April 1927. The author states that the genus *Carex* is one of the most variable of plant genera in its chromosome numbers, 44 species having 22 different chromosome numbers varying from 9 to 56 pairs, and they clearly have taxonomic significance—species belonging to the same section of the genus have chromosome numbers of about the same height. The roses present some very striking features which are well explained. The author also contributes to the *Journal of the Horticultural Society*, vol. 47, 26, 1922, Notes on the Origin of the Moss Rose, which is closely related to the old cabbage rose, *Rosa centifolia*, which has been in cultivation for over 2000 years. Herodotus, 450 B.C., says that roses growing near Midas in Macedonia had 60 petals and were the most fragrant in the world. The specific name we owe to Theophrastus who mentions the rose with a hundred petals—*centifolia*. Boerhaave is assumed to be the first recorder of the Moss Rose in his Physic garden of Leyden as *Rosa rubra plena spinosissima pedunculo muscoso*. One wishes we had space to give this very interesting paper in full since the Moss Rose is traced back to about 1696 when it was cultivated at Carcassone. At the General Meeting of the Society at Cambridge, July 5, 1927, Major Hurst stated that the chromosomes and characters of 184 recognised species, 16 new Chinese species, and 89 hybrids of known parentage, representing all the sections of the genus *Rosa* have been studied.

Differential Polyploidy in the Genus *Rosa* in *Supplement*, band ii., *der Zeitschrift für Inductive Abstammungs und Vererbungslehre*, 1928. The genus *Rosa* has been the despair of systematists since the time of Linnaeus, and the fact that Gandoger (1892-3) gives Latin diagnoses of 5549 binominal "species" of the roses of Europe and the Orient illustrates at once the polymorphy of the genus and the intensive study which has been given to it. *Rosa spinosissima* is put in the BBCC species of the regular Tetraploids, with 4 septets (BBCC) of somatic chromosomes and 2 septets (BC) of gametic chromosomes, and combines the characters peculiar to the B and C septets. *R. pimpinellifolia* is in the BBDD species—all different Tetraploids, with 4 septets (BBDD) of somatic, and 2 septets (DD) of gametic chromosomes, and combines the characters peculiar to the B and D septets in various ways, causing much variation. The Caninae all belong to the irregular septet species of *Rosa*. There are 180 possible combinations of which only 25 have been so far identified in the wild state, and 6 of these are evidently natural hybrids growing near their putative parents. These 19 irregular septet species include *R. omissa* Déség., *R. recondita* Puget, *R. mollis* Sm., *R. pomifera* Herm., and *R. rubifolia* Vill. The Pentaploid species include *R. agrestis* Savi, *R. canina* L., *R. micrantha* Sm., *R. tomentosa* Sm., *R. rubiginosa* L. (why not use the name *R. Eglanteria* L.), *R. pseudo-mollis* Ley (this may be a natural hybrid of *R. Eglanteria* (here the proper name is given) and *R. mollis* with which it grows), *R. coriifolia* (*R. caesia* Sm. is the older name for this species) and *R. glauca* Vill. Alluding to the permanence of the individual plant; an astonishing statement is made that a bush of *R. canina* growing on the Cathedral at Hildersham in Germany was in existence there in A.D. 818. F. A. Lees held that our hedge roses were short lived. The work being done by Major Hurst, Dr Heslop-Harrison and Miss Blackburn is of the highest importance.

HUTCHISON, J., and J. M. DALZIEL. FLORA OF WEST TROPICAL AFRICA. The country includes the British West African Colonies, British Cameroons, the French and Portuguese Colonies south of the tropic of Cancer to Lake Chad and Fernando Po. Vol. i., part ii., pp. 246-523. Crown Agents for the Colonies, London, 1928; 8/6 net. Contains Families 71 (Sterculiaceae) and 112 (Umbelliferae partim). This continuation is on the same high level as the preceding part. The keys supplied are well arranged and practical, and the illustrations excellent.

IRISH NATURALISTS' JOURNAL. Edited by R. J. Welch. Bimonthly, 6/- per annum. Aliens at Limerick, C. D. Chase. Include *Brassica gallica* (*Erucastrum Pollichii*), *Lepidium perfoliatum* and *Coronilla varia*. *Cochlearia anglica* on the Boyne, Meath and Louth, R. L. Praeger. *Mimulus moschatus*. Bank of the Bann at Whitecoat, Miss J. M. White. Distribution of some Irish Ferns, R. L. Praeger. *Spiranthes stricta* Ryd., with a beautifully coloured plate, Matilda C. Knowles. Miss Knowles conclusively proves that the northern plant is gemmiparous as is the southern one and that Col. Godfery's contention in the *Orchid Review* for September 1922 was incorrect. I saw only four specimens in 1928 and it seemed that at least there was varietal difference, but my southern plant grew in a pasture with *S. spiralis* while the Loch Neagh plant had its feet in water. The British Bryological Meeting and the Excursion at Belfast, August 25-31, 1928, by J. B. Duncan. Six new species and six varieties were added to the Irish flora. One species of Hepatic, *Cephalozia Hampeana*, new to Ireland, was gathered in Antrim. Mr J. P. Brunker records *Lycopodium inundatum* from the lower lake at Glendalough, Co. Wicklow, and Mr J. A. Palmer gives *Asplenium lanceolatum* from the cliffs near Arklow Head in the same county.

JACKSON, B. DAYDON. A GLOSSARY OF BOTANIC TERMS WITH THEIR DERIVATION AND ACCENT. Fourth edition, revised and enlarged. Pp. xii., 481. Duckworth, London, 1928; 15/-. The preceding edition was favourably reviewed in these pages 457-8, 1916. The last time I saw the unwearied compiler and born indexer was at the Linnean Society's room when he showed me the progress he had made towards the present edition. It has been reproduced by photo-zincography and the numerous additions made since that time are grouped as a supplement of 64 pages. One finds from this work that laboratory botanists are just as culpable in making new words or combinations as the taxonomists, and the names coined are even more uncouth, especially such as are produced by those chartered libertines—the ecologists. How well they must sleep after coining "Allocthonous;" "Amathicolous;" "Anaporetic;" which sounds like a soothing medicine; "Archiproctrum;" "Aviccennietum; "Blastocoelian," which suggests a comforting word to hurl at a partner who revokes; "Calamagrostidetum," which Clements mercifully shortened to "Calamagrosetum;" "Pontohalicolous" or "Seismonastic." Well, if you ever want to know what these are, consult the Glossary and all will be well. A slight attack of Appendicitis (there are only four appendices) adds another value to the Glossary which is an essential volume for your reference shelf since not far short of 25,000 terms are here explained.

JOHNSON, WALTER, F.G.S. GILBERT WHITE, PIONEER, POET AND STYLIST. Pp. 340, 1928. J. Murray; 15/-. "After dealing with White's personal character and mode of work, the author attempts to show what were White's definite contributions to Natural History—ornithological, botanical, geological, etc., and what are his claims as a pioneer. A considerable amount of unpublished material has been extracted from the six volumes of White's manuscript 'Naturalists' Journal.' The history of the famous blunder about the hibernating hirundines is clearly traced. Special topographical and geological maps, based on a thirty years' acquaintance with Selborne, have been drawn up, and the little known pen-and-ink sketch of White is reproduced. [One wishes it had never been found, as it disturbs one's ideal.] An attempt is made to discover the secret of White's charming style, and his poems, so frequently overlooked, receive full discussion." Such is the scope of this, the latest, work on the Selborne Naturalist. The author alludes to the books which White had in his library. Botany was represented by the works of Linnaeus, Hudson, Ray and Stillingfoot. His well-thumbed and annotated copy of the "Flora Anglica" is an evidence that they were not neglected. It is well that White's knowledge respecting "dew ponds" should be accentuated. The chapter on Botany is headed by a quotation from Richard Jefferies—"Who can care alone for his or her petty trifles of existence, that has once entered among the wild flowers." In the "Flora Anglica," which I once had given me to examine, no fewer than 430 species are marked as having been seen by White, and the Cranberry was an addition to the list. Canon Vaughan (*Longman's Magazine*, 531-6, 1892) dealt in graceful terms with White's list. Mr Johnson shows how wide was his interest, not only with species but with ecological factors. A clumpy sedge, *Carex cespitosa*, he says, grew on the verge of Wolmer Forest. The more correct namo for the English *cespitosa* is *Goodenowii*, but White's plant may have been, as Mr C. E. Britton suggests, *C. paniculata* or possibly *C. elata* All. (since White has already marked *paniculata*), as Mr Watson suspects. It is the older name for Goodenough's *stricta*. The book may be most cordially recommended not only to the disciples of White but to a much wider range of readers who will find much to appreciate in its many-sided range of references.

Johnston, Col. H. H. Additions to the Flora of Zetland, second paper in Trans. Bot. Soc. Edin., May 1928. Includes *Taraxacum acrifolium* from Fetlar. Additions to the Flora of Orkney, 11th paper, *l.c.*, 1928. The plants which are new are referred to in the New Records.

Journal of Botany, The. British and Foreign, 1928, edited by A. B. Rendle, D.Sc., F.R.S. Vol. lxvi., pp. 368, and index; 2/- monthly, 22/6 yearly. Mr C. E. Britton (p. 41) continues his Notes on some Minor Varieties of British Plants. These are noted in our Report under the species. Mr Turrill (p. 44) describes a new var. of *Geranium Endressii—Thurstonii* from Cornwall. Dr E. J. Salisbury (p. 48) has an article on a Biological Flora of Britain. Such a publication would be most useful and Dr Salisbury is evidently the person to select for its production. The specimen table printed shows, however, that more attention should be given to the Topographical and Nomenclatorial side since the first four lines contain as many errors. The Latin name should be *Scilla non-scripta* (L.) Hoffmg. & Link. Neither *nutans* nor *festalis* retains the original trivial. Surely the English name is not Wild Hyacinth. The statement that it is unrecorded for 8 counties is manifestly wrong. Wigton and West Ross, 74 and 105, are in my list for those counties published in the "eighties." It is only unrecorded for two counties. The distribution through the 40 Irish counties should be given. An English translation of Dr A. Javorka's paper on Hungarian species of *Onosma* is supplied by Mr C. C. Lacaita (pp. 9 and 57). Mr N. E. Brown (pp. 75, 138, 265, 322) writes on *Mesembryanthemum* and Allied Genera, in which his new genera are described in alphabetical order. Mr F. J. Hanbury (p. 81) gives a memoir of the Rev. E. F. Linton, with a copious bibliography, the latter due to Mr Ardagh. Dr R. L. Praeger (p. 87) describes a new hybrid rose, *canina* × *rugosa*, from Cushendun, Antrim. Rev. T. Stephenson (p. 97) writes on Southern (French) Marsh Orchids. Mr A. Bennett (p. 102) has Notes on *Potamogeton*. He gives *P. lanceolatus* as a new record for Sussex, but surely the evidence is quite unsatisfactory. At Kew there is a specimen from Ball's herbarium labelled (or probably mislabelled) Sussex, coll. Borrer. In pencil is added Penrose, but there is no such place in Sussex. The confusion is probably due to the fact that Borrer lived in Sussex. Penrose is doubtless a mistake for Penrhos in Anglesey where he probably stayed. Mr C. E. Salmon (p. 107) has a Biblographical Note on Schultz and Billot Archives. Mr E. J. Baker (p. 115) writes an obituary notice of Robert Miller Christy with bibliography, and there is one of W. A. Shoolbred by Miss Phyllis Marshall (p. 118). and one of L. A. Riley by Mr Sprague (p. 118). Notes on the British Pansies (p 129) by Dr E. Drabble gives the history of *Viola nana*. Dr Ruggles Gates (p. 133) gives a paper on *Oenothera Agari* and *eriensis*. Miss Armitage has a note (p. 150) on the Botanical Essay Society. Notes on *Orobanche* (p. 167) by Arthur Bennett. Mr Thompson's Notes on *Arabis scabra* as intentionally sown in Somerset appearing on p. 152, and again practically unchanged on p. 177, is like mercy being twice blessed. Ballard's Catalogue of Islington

Plants, 1820-97 (p. 185). The Longevity of Seeds (p. 203) by H. W. Pugsley. *Diplotaxis tenuifolia*, var. *integrifolia* Koch (p. 306), by C. E. Salmon. *Epipactis dunensis* Godfr. on the French coast (p. 217) by R. Meslin. The Canarian *Sempervivum* Flora (p. 218) by R. L. Praeger. Notes on the British Species and Forms of *Erophila* (p. 234) by C. E. Salmon and E. J. Baker. Under *E. verna* 14 vars. are given, under *E. Boerhaavi* Dum. 6, and under *E. praecox* DC. 3, which have been named by Dr Schulz. Mr R. D'O. Good (p. 253) has Notes on a comparison of the Angiosperm Floras of Kent and Pas de Calais. This contains a strange mis-statement—that *Erucastrum Pollichii*, *Scorzonera humilis*, and *Tetragonolobus siliquosus* "have been found once or twice in this country, but always as transitory casuals." As a matter of fact the first has been found dozens of times in various parts of the country, and may usually be found year by year near Newmarket. *Lotus siliquosus* has been established for many years in Hants, Oxon and Berks. The *Scorzonera* is almost certainly as native as its neighbour, *Erica ciliaris*. The British Association at Glasgow (p. 281). A. Becherer (p. 293) claims that *Oxytropis Halleri*, var. *appresso-sericea* (Shuttleworth) is the correct name for the Scottish plant, as the American *O. sericea* Nuttall is earlier. L. B. Hall (p. 299) describes a new var. of *Teucrium Scorodonia*—var. *acrotomum*. There is an obituary of Carl Axel Magnus Lindman by A. J. Wilmott (p. 300). Sir Maurice Abbot-Anderson (p. 303) has an appeal for the Preservation of Wild Flowers. Miss Vachell (p. 333) has a very wise letter on the danger and mischief likely to result from sowing seeds or planting rare species in wild situations. *Alchemilla pubescens* as a British Plant (p. 345) by C. E. Salmon. L. B. Hall (p. 361) describes a new variety of *Juncus maritimus*—var. *congestus* from Studland, Dorset.

Kew Bulletin of Miscellaneous Information. H.M. Stationery Office, pp. 416, appendix pp. 105, 1928; 12/6. This "erratic publication," as Mr Britten once spitefully called it, is no longer erratic, but is a most regular and valuable publication, containing, as it does, a mass of valuable material. The first article is "Researches on *Silene maritima* and *S. vulgaris*," by our members Dr W. B. Turrill and E. Marsden Jones. The natural hybrid of the two is more frequent than is supposed. The hybrid has been cultivated at Kew and at Potterne and the resulting crosses are described. Hybridity does not appear to be the influencing causes in the variations given in our List. Tropical African plants are described by J. Hutchinson and J. M. Dalziel. Mr C. E. Hubbard establishes some new African Grasses. Mr C. V. Marquand describes eighteen new species of Asiatic Gentian and alludes to ten others. Prof. Craib names ten new Siamese species and Mr Geddes eight others. Asperulae Australiense are dealt with by H. K. Airy Shaw and W. B. Turrill, sixteen species being treated of, in addition to the European *Asperula arvensis*. Mr N. E. Sandwith deals with some new species of the Argentine Andes and names four of them. Mr T. A. Sprague has a paper on the correct spelling of certain generic names. He plumps for *Mesembryanthemum*, *Annona* and *Elichrysum*. In this he has the support of Dr J. Briquet and Dr Hans Schinz. He prefers *Ailanthus*, *Amaranthus*, *Borasoo*, *Prunella* and *Euonymus*. On p. 337 he has another valuable paper on the same subject. Twenty-five species of *Dichapetalum* are described by M. B. Moss. Nine new species of Andean and eleven species of Chinese Violets are founded by W. Becker, whose recent death we have to deplore. C. E. Hubbard and N. Y. Sandwith give some new plants from Spain. J. E. Dandy describes a number of Malayan Magnoliaceae. Mr P. J. Greenway supplies notes on the Forest Flora of Central Africa. Dr Stapf has a paper on the Nomenclature of *Bromus* in which he says " Linnaeus' concept of *Bromus* is entirely that of *Serrafalcus* Parl., and *secalinus* is technically the standard species of the genus. Panzer in 1814 separated a genus, *Zerna*, which Lindman in his *Svensk Fanerogamflora* adopts for our *Bromus erectus*. But Panzer's was not a clear definition, since he includes plants of *Festuca*, *Vulpia* and *Brachypodium* in his genus, just as Crantz' genus, *Epipactis*, is vitiated by having half-a-dozen distinct genera put into it. Therefore " to restore (*Zerna*) now in the face of an equally good, if not better, nomenclature which runs through the literature of a century would actually violate the spirit underlying the Rules of Nomenclature, although it might satisfy the spirit of the latter." Stapf suggests that *B. sterilis* is the standard species and *Serrafalcus*, if kept as a distinct genus, has *secalinus* as the type, while *Zerna* would have its type as *erecta*, as used by Lindman. Orchid-flowered Butterworts by T. A. Sprague. C. E. Hubbard describes the genus *Astelba* or Mitchell grasses, renowned for their drought resistance and fodder value. He makes a separate genus *Myconella* for *Chrysanthemum Myconis*, and says *Myconia* Neck. is invalid, although it has been accepted by botanists of repute. *Myconia* is not a worse word than *Bartsia* or *Goodenia*, and is it really necessary to remove *Myconia* from *Chrysanthemum*? Mr F. N. Bowes supplies a valuable article on the Banana—its forms and variations, with a copious bibliography. New species from British Guinea are given by N. Y. Sandwith. Mr V. S. Summerhayes describes some new Seychelles plants. So it will be seen what a splendid output is being made by the Kew staff.

LEHAIE, J. HOUZEAU DE. Bulletin des Naturalistes de Mons et du Borinage. Tomes ix. and x., pp. 184, 1928. Note nouvelle sur la variation des Ophrys Belges, the species mentioned being *O. fuciflora*, *O. muscifera* and *O. apifera*. Some of the *fuciflora* plants approached *O. arachnitiformis*, *O. oestrifera*, *A. ferrum equinum* and *O. Scolopax*, and there were many colour forms. Considerations sur la Systématique et la Génétique des Orchidées Belges. In tabular form 21 variations of 21 forms of *Orchis Morio* are shown. Very pleasant excursions were spent in botanising round Mons in three days in July, where the botanists were received by the Burgomaster. Several Orchids were seen, including luxuriant *Orchis purpurea*, and in the woods of the Prince de Croy *Rubus sulcatus* and *biformis*. At Croix Caillau *Orchis maculata* and *O. latifolia* were both found, but which forms? In the marshy places at Douvrain (prairie marécageuse sur alluvion), similar to places at Ridge in Dorset, *Scorzonera* and *Ajuga reptans*, var *alpina* were noticed.

Many other places were examined and the plants are detailed. It is a very useful publication.

Lincolnshire Naturalists Union Transactions, No. vii., 1927. Presidential address by H. Wallis Kew. This is a very valuable biographical sketch of Martin Lister and of his connection with the Natural History of the county. After a passing reference to Francis Willoughby, he gives full honour to our member, Mr Goulding's memoir of Lister. Mr Kew gives from the Lister MSS., n. 39, in the Bodleian Library, a list of Lincoln plants about Barwell, the birthplace of Sarah Jennings, Duchess of Marlborough. These were noted in July 1666 and doubtless in most cases they are the earliest evidences for the county. Other plants were noted, including the hybrid *Geum*. Mr Wallis Kew has materially added to our knowledge of the great surgeon, who is commemorated in Robert Brown's genus, *Listera*.

Lindman, C. A. M. Illustrerad Skoloch Exkursionsflora. Over Sveriges Karlvaxter. Pp. 330. P. A. Woodstedt & Sonners, Stockholm. A very melancholy task is before one when one refers to this, the last, volume issued by our very erudite and kindly Honorary Member. In these pages is compressed an enormous amount of matter connected with the flora of Sweden, and it is made simple and clear to the young students for whom it is specially intended. It is only fitting that in Sweden a brief outline of Linnaeus' artificial system should be given, and this is excellently treated. The Flora is arranged according to Engler's system which was adopted in Lindman's larger work, the "Svensk Fanerogamflora," of ten years ago. Beautiful figures, drawn by the author, illustrate plant details on well nigh every page. The nomenclature is very close to our own as some examples will show in these running remarks. *Potamogeton gramineus*, rather than *heterophyllus*, is chosen. *Phleum nodosum* and *P. pratense* are kept as distinct species. *Agrostis stolonifera* is used instead of *A. alba*; *A. capillaris* (as in the List) is used for *A. vulgaris*. *Poa pratensis*, *P. angustifolia*, *P. subcaerulea* and *P. irrigata* are kept distinct. *Puccinellia* is correctly used instead of *Atropis*, but *P. rupestris* should be *P. procumbens*. *Bromus erectus* appears as *Zerna erecta*. His genus *Bromus* includes the Mollis section (the *Serrafalcus* of Parlatore). The Swedish *Agropyron violaceum* he calls *A. latifolium*—it is not certain that the Ben Lawers plant is identical. *Eriophorum polystachyum* is used for *E. angustifolium*. *Eleocharis* is united with *Scirpus*, and *Cladium* is still maintained. *Kobresia* is spelt with a *C*. The figures of the Carex fruits are excellent. *C. rigida* is maintained as is *C. verna* for *caryophyllea*. *C. flava* and *lepidocarpa* are kept distinct, as are *Juncus effusus* and *conglomeratus*, *J. compressus* and *Gerardi*, *J. bufonius* and *ranarius*, and *J. supinus* and *J. Kochii*. *J. nodulosus* Wahl. of 1820 is used instead of *J. alpinus* Vill. of 1787. Perhaps he considers the Swedish plant distinct. It is common there, and a definite species, and is more likely to occur in Britain as the Scandinavian rather than the Dauphiny form. The Amentiferae are well illustrated. The elms are

U. glabra (*montana*), *U. foliacea* (*campestris*) and *U. laevis*. *Chenopodium serotinum* is, I think, wrongly used for *ficifolium*. *Atriplex glabriuscula* is rightly used for *A. Babingtonii*, and *deltoidea* is kept apart from *hastata*. *Montia* is treated as in our List. *M. verna* is much scarcer in Sweden than *lamprosperma*. *Sagina scotica* is used: he says it may be *Linnaei* × *procumbens*. *Tunica prolifera* is used, as are *Nuphar* and *Nymphaea*. He wisely chooses *Radicula* and not *Rorippa* or *Nasturtium*. Clearly it is the oldest name for the genus. It may be added that Natives, Aliens and Vernacular plant names are all in the same heavy type. *Cerastium arcticum* is adopted, despite the prior claims of *C. nigrescens*. The roses, including the adventives, are reduced to 17 species. There are 16 Alchemillas and 27 Rubi. *Armeria* is still kept instead of *Statice*. *Centaurium* correctly replaces *Erythraea*. Eleven species of Mints are given and 10 Eyebrights. Only the group-names of *Taraxacum* and *Hieracium* are given. *Phyllitis* and *Eupteris* are correctly used for the Hart's Tongue and Bracken. The common Bracken of Sweden is type *Aquilina* not, as with us, the var. *lanuginosa*. Sweden possesses 5 species of Moonwort. It is a matter of the deepest regret that Dr Lindman did not live to see the success which his last work is bound to attain.

LINNEAN SOCIETY. Annual Subscription, £4; Entrance Fee, £6. Burlington House, Piccadilly. President, Sir S. F. Harmer, F.R.S.; Secretary, Lt.-Col. A. T. Gage. Proceedings, 140th Session, pp. 163, 1928. Dr A. Arber (p. 43) showed flowers of the orange-brown variety of the cowslip from Whittlesford, Cambridgeshire. The root was planted in a garden and the flowers maintained their colour. It was reported that the Library became one of 49 other Libraries in conjunction with the Central Library for Students and had thereby received a grant of £666 13s 4d. 185 books had been purchased during the year and 110 books and reprints presented. The Presidential address was given on May 24th by Sir Sydney F. Harmer. Its main theme was the history of whaling and the effects which would follow the wholesale slaughter now going on. (In 1926-7 no fewer than 11,720 whales were killed, of which South Shetland was responsible for 4838.) The Linnean gold medal was awarded to E. B. Wilson. Meetings. November 3. Mr T. A. Sprague gave an account, illustrated with lantern slides, of the Herbal of Brunfels. November 17. Mr N. E. Brown read a paper on the South African Species of Iridaceae in Thunberg's Herbarium, in which he restores *Dietes* and *Helixyra*, two genera established by Salisbury. January 19. Mr C. V. B. Marquand gave an account, illustrated with lantern slides, of the collection of plants made by Captain F. Kingdon Ward in the Eastern Himalayas and Tibet. Many alpines were collected by him at 17,500 feet on the Nam La pass. The collection, excluding the genera *Meconopsis*, *Rhododendron* and *Primula* comprises 446 species, including 54 new species and 26 new varieties. Dr J. Burtt Davy, on behalf of P. J. Greenway, exhibited *Pyrola rotundifolia* from Bagley Wood, Berks, for which county it was unrecorded.

LINNEENNE, SOCIETE DE LA SEINE MARITIME. President, Dr A. Loir. Pp. 1261, 1928. Contains a note by Paul Senay on *Erica Tetralix* à feuilles quinées ou senées—*E. Tetralix*, var. *quinaria* Guffroy (p. 8), known from seven departments in France. Notes sur la flore bretonne II., Bull. Soc. Bot. Fr., 29, 1927. In the plants distributed (see p. 19) there is a new var. of *Lepidium ruderale*, *i.e.*, *parvulum* Chassagne, from Limagne d'Auvergne. It is a xerophilous form, only 8 to 10 cm. high, very slender, pubescent and scaly.

LOCY, WILLIAM A., Ph.D., Sc.D. THE GROWTH OF BIOLOGY. Zoology from Aristotle to Cuvier, Botany from Theophrastus to Hofmeister, Physiology from Harvey to Claude Bernard. Pp. 481, tt. 140. G. Bell & Co., 1898; 16/-. In this book Dr Locy depicts vividly the struggle and triumph of the scientific spirit. He gives a fascinating survey of the successive steps in the growth of our knowledge of organic nature, from the Greek foundations to Darwin in zoology, Hofmeister in botany, and Claude Bernard in physiology. He brings under one view the progress of the varied divisions of natural history until in the nineteenth century they merged into the broad science of biology, and also supplied the foundation for scientific medicine. Special features are the study of pre-Renaissance natural history, the illustrated chapter on the microscope, the terse biographical sketches, and the series of 140 apt illustrations, many of them from rare sources. The author had compiled this work but it had not been sent to the press when his untimely death occurred on October 9, 1924. While the present volume is complete in itself, it should be said that the author had wished to treat the history of the doctrine of organic evolution, of genetics, and certain kindred topics in a special volume. His sudden death made it impossible even to start the supplementary volume. The book is made up of twenty chapters—the second on the Natural History of Antiquity for which he claims a very ancient origin. Even in the palaeolithic period of prehistoric man more than 100,000 years ago, not less than six culture periods have been traced, each extending over many centuries. The vividly beautiful carving of the red deer from the cave at Lortet is shown. It was carved on an antler by some artist of the Cro'magnons, a race which entered France some 50,000 years ago. As Ray Lankester said, it excelled anything of the kind that Landseer or Rosa Bonheur ever drew, because it was more life-like. The author gives a due meed of praise to Aristotle—" no other observer approached him up to the time of Ray," and " his was the most prodigous intellectual achievement ever connected with any single name." Perhaps in one way this is too sweeping. One ought to bear in mind that, as in the case of Shakespeare in another field, each of these great men had the supreme faculty of bringing into the focus of one beam of light the rays which had emanated from various minds whose names had perished with them. Unknown and unhonoured these precursors had given their knowledge into the mind of one who with it could illuminate the future. Aristotle handed his torch on to the Father of Botany, Theophrastus, but imperishably it has been connected with his own name. Theophrastus knew and mentioned about 500 species but, as one has elsewhere said, it was not only the names but their qualities in a very wide sense, their habitats, and their Ecology that he was acquainted with. This knowledge Sachs has wrongly minimised. Natural History in the Greek and Roman periods is well treated and then we are carried on to Galen and mediæval times to Brunsfelds, Fuchs and Cordus, and then on to Gesner and John Ray. The anatomists and physiologists are noticed at considerable length, as well as the early microscopists, the pages being copiously illustrated. The labours of Linnaeus are appreciatively described and the progress of Botany from his time to that of the somewhat narrow-minded Schleiden. A warm appreciation of Hofmeister and Claude Bernard completes a volume replete with interest.

MAIDEN, J. H., F.R.S., etc. A CRITICAL REVISION OF THE GENUS EUCALYPTUS. Vol. vii., part 10. Part lxx. of the complete work, with four plates. Pp. 449 to 492, 1928. Alfred James Kent, Government Printer, Sydney; 3/6. In this part the following plants are dealt with as to range, affinities, etc:—*Eucalyptus Baxteri* (Benth.), Maiden and Blakely, nov. comb., var. *pedicellata*, Maiden and Blakely, nov. var.; *E. Blaxlandi*, Maiden and Cambage; *E. agglomerata*, Maiden; *E. orgadophila*, Maiden and Blakely, nov. sp.; *E. acmenioides*, Schau., var. *tenuipes*, Maiden and Blakely, nov. var.; *E. Murphyi*, Maiden and Blakely, nov. sp.; *E. Stuartiana*, F. v. M.; *E. angophoroides*, R. T. Baker. The Cotyledons are dealt with in this number, with chapters on vernacular and aboriginal names. This gigantic work is nearing its completion but it is sad that it no longer has Mr Maiden to see it through the press. Mr R. H. Cambage, C.B.E., and Mr W. F. Blakely of the Botanic Garden, who have been in touch with the late Mr Maiden, will be responsible for its completion.

MARIE-VICTORIN, FRERE. Sur un *Botrychium* Nouveau de la Flore Americaine et ses rapports avec le *B. Lunaria* et le *B. simplex*. In Roy. Soc. Canada, 319-40, 1927. The new species is *B. minganense*. It is found in many places in Quebec and in Manitoba, Alberta, Montana, Colorado and California up to 7000 feet. It differs from *B. simplex*, inter alia, in having the barren frond springing from the stem of the fertile frond at 3/10 of its distance from the base; in *simplex* it springs from the base. It is about twice the size of *simplex*. The distribution of *B. minganense* is shown on a map: it is curiously non-continuous. Two forms of *B. Lunaria* are also described.

N. 12, p. 163, 1928. Deux épibiotes remarquable de la Mingance.

N. 13. Le Dynanisme dans la Flore du Québec. Pp. 90, with some good photography.

MURR, Prof. Dr JOSEF. He contributes two papers to "Hiemat" Voralberger Monatshefte, Heft 10 and 11, 1928—Bemerkenswerte Farbenspiel—Kategorien and An Wärmekategorien der heimischen Herdepflanzen, 1927.

Marlborough, Report of the Natural History Society, No. 76. Pp. 92. Cambridge University Press, 1928; 5/-. C. P. Hurst contributes a paper on the Fungi found round Great Bedwyn, Wilts, in 1927. He also records 7 species of Hepatics, and 7 Mosses new to the area. Mr H. H. Knight sends a list of 60 corticolous lichens of which 18 are new to Marlborough. The London University Foray also added a few species as well as some plant-galls. The 1927 list of Flowering Plants includes 666 species and varieties, one boy, E. S. M. Magor, recording 547. A few aliens appear to be new to the district. I am responsible for many things but not I think for *Scilla non-scripta* H. & L., var. *ebracteata*. It should be *bracteata*.

Matthews, J. R., M.A. Recent Additions to the List of Perthshire Plants in Trans. Perth. Soc. of Nat. Science, 185, 1926-7. This interesting and valuable list brings together the various records made in the 15 years since Mr Barclay published his additions to Buchanan White's "Flora of Perthshire." We are grateful to Mr J. R. Matthews for such an excellent compilation. One regrets to see specific rank given to *Nymphaea occidentalis*, following the "Cambridge Flora" as it is against the views of Ostenfeld and other botanists. As regards *Sagina scotica*, Lindman and other competent authorities reject the identification of it in the "Cambridge Flora" with *Sagina Saginoides*. Lindman, after mature consideration, retains *S. scotica* in his recently published Flora, and of course keeps *Saginoides* (*Linnaei*) distinct. The full history of it is given in our *Reports*. I saw *Valeriana pyrenaica* L. in Perthshire quite naturalised, but evidently of garden origin. One sincerely hopes that Mr Matthews may be induced to re-write the Flora of Perthshire as no one could do it better. Perhaps it is the most interesting and the richest county in Scotland. "The Flora of Perthshire" suffered much by its not having the final touch given it on account of White's lamented death.

McGill and Smith, Ayr. Plant Breeding, by J. Watson, contains some useful particulars. There are five good illustrations of grasses and clovers in the "Enterprise" of 1929.

Meslin, Roger. Notes sur la flore du Département de la Manche, 1927, with a plate of *Epipactis dunensis* from "bois sablonneux près la Mare délaissée, Coutainville." A paper kindly sent by Col. M. J. Godfery.

Naturalist, The. Edited by T. Sheppard, M.Sc., and T. W. Woodhead, Ph.D. 1/6 monthly; 15/- per annum, post free. Mr F. A. Mason gives a list of 46 species of Autobasidiomycetes, out of the 93 listed in Carleton Rea's classic work.

New Zealand Institution, Transactions and Proceedings of the. Vol. 59, published 1st March 1928. Pp. 218. Ferguson & Osborn, 202 Lambton Quay, Wellington, N.Z. Includes New Zealand Bangiales by R. M. Laing and a brief account of the Re-establishment of Vegetation on Tarawera Mountain since the eruption of 1886, by E. Phillips Turner. This mountain was practically sterilised at the same time as the beautiful Pink and White Terraces were destroyed. Volcanic ash and mud were scattered over 6000 square miles of country. Among the pioneers to grow on the ash and mud covered lands were *Arundo conspicua*, *Coriaria arborea* and our Bracken analogue, *Pteridium esculentum*. Mr Turner found in 1927 that already a forest of trees from 7.5 to 12.2 metres high had grown up on the mountain. *Gualtheria* species, especially *G. oppositifolia*, has a special ability to colonise. At 1600 feet the mat plants—those curious looking *Raoulia australis*, *tenuicaulis* and *glabra* and *Pimelia prostrata* occurred in scattered colonies on the fine loose scoria or sand. Here too, among others, were *Hypochaeris radicata*, *Holcus lanatus*, *Aira caryophyllea*, *Centaurium umbellatum*, *Anagallis arvensis*, in addition to many native species. At 915 metres *Hypochaeris*, *Trifolium dubium* and *T. repens* were noticed. The summit, 1120 metres high, had several species, all of which "have been established through the agency of wind . . . and this fact enforces the observations of others, that wind is definitely the chief agent in the extension of vegetation on a virgin soil . . . existing in this locality." Comparing Tarawera with the Krakatoa eruption, Mr Turner narrates that dust discharged from Tarawera in 1886 was carried by wind and deposited 60 miles from the mountain. On one occasion when on a steamer travelling to Sydney he saw in mid ocean a thistle pappus floating in the air. Sand on desert surfaces is transported hundreds of miles.

NORTH WESTERN NATURALIST. Edited by A. A. Dallman. Vol. III. Published by T. Buncle & Co., Arbroath. 2/- quarterly; 7/6 per annum. post free. J. H. Salter gives a paper on the Altitudinal Range of Flowering Plants and Ferns in Mid Wales, pp. 131, 170. Notes on a Biological Flora of Britain, E. J. Salisbury, p. 5. Biological Control of Noxious Weed, W. M. Davies, p. 22. Muscineae of the Wirral, W. A. Lee and W. G. Travis, p. 26. Flora of Aberdovey, Merioneth, by our member, Mrs M. C. Debenham. Includes *O. latifolia*, which is most certainly incorrectly named. It is said to "vary much in colour from purple to rose." F. W. Holder and R. Wagstaffe give recent plant records for the Southport district, pp. 41 and 91. These include *Delphinium Ajacis*, *Lotus tenuis*, *Lathyrus sylvestris* on the dunes, and *Sisyrinchium angustifolium*. Moss Records, J. H. Payne, p. 41. Cumberland Mosses, J. Murray, pp. 42, 91, 141. The review of "The British Plant List," p. 113, suggests that only a cursory glance could have been given to the preface. Exception is taken to the inclusion of the Fig, Date and Orange. But each of these has been found wild in Britain. For over 20 years the fig has grown on Chesil Beach. To avoid confusion naturalised and casual species have a separate mark. Blame is given for including among others, *Helxine Soleirolii* as a plant growing in a wild state in Britain. The denial of this shows deplorable ignorance or else that confusion has been made between the two terms "wild" and "indigenous," which have different meanings. Assurance can be given that it is not from an oversight that the Banana, Coco-nut, and Mahogany are omitted from the list. If ever they are found in a wild state in Britain they will be included, but their occurrence is not probable since it is the timber, not the seeds, of Mahogany which we import, Coco-nuts do not readily germinate, and are not indiscriminately cast about, and Bananas, as we have them, are seedless. Evidently there is a confusion of "British Plants" with "Plants growing wild in Britain." The White Water-lily is British, but the Victoria Regia is not, although it grows in the conservatory at Kew. There is no fear of an educated foreign Botanist being misled into thinking that plants not marked with an asterisk are naturalised in Britain any more than we should imagine that the numerous garden plants which are included in Ascherson and Graebner's Flora are necessarily natives of Germany. Mr J. D. Massey records *Corrigiola* and *Lathyrus tuberosus* from Formby, but two important species seem to have evaded the local botanists.

NORTHANTS, JOURNAL OF THE NATURAL HISTORY SOCIETY, 1928, Quarterly. *Erica Tetralix* L. on Helpston and Ailsworth Heath and Sutton Bog. J. W. BODGER.

PRESLIA. Reports of the Czecho Slovak Botanical Society of Prague. Pp. 230, 1927. Contains some valuable papers including Jaromir Klika's Etude Géobotanique de Velka Tatra : les types forestiers, and Dr Franta Novak's Ad Florae Serbiae Cognitionem additamentum alterum. Figs. 16 and 6 tab. We notice that the nomen nudum, *Quercus sessilis*, is chosen for *Q. sessiliflora*, that *Silene venosa* is used in the sense of *S. Cucubalis* and that *Roripa* is adopted instead of *Radicula*. There are some excellent figures of the newly described plants. Dr Domin's papers show that he is as active and industrious as ever.

BRNO, L'UNIVERSITE MASARYK, PUBLICATIONS OF, No. 27, 1923. Geobotanical Analysis of the Plant Areas in the Steppes Adjacent to the Ural mountains, by Josef Podpera. This was prepared during his sojourn at Ufa at the foot of the Urals and is an excellent attempt to solve a part of an important problem in connection with the flora of the whole of Eurasia, viz., how and where the plants of the Eurasian deserts have arisen. He makes four component groups :—(i.) The Eurymediterranean component. (ii.) The Pontic Oriental component. (iii.) The Asiatic component of the Steppes and Deserts. (iv.) The component of the Arctic Steppe. Three species of the last have appeared adventively in Britain—*Lactuca tatarica*, *Axyris Amarantoides* and *Elymus sibiricus*. *Polygala vulgaris*, *Dianthus Deltoides*, *Linum perenne*, *Hypericum perforatum*, *Vicia Cracca*, *Spiraea Filipendula*, *Potentilla argentea*, *Achillea Millefolium*, *Chrysanthemum Leucanthemum*, *Senecio campestris*, *Serratula*, *Hypochaeris maculata*, *Campanula glomerata*, *Lithospermum officinale*, *Euphrasia brevipila*, *Origanum*, *Thymus Serpyllum*, *Carex ericetorum*, *Arrhenatherum*, *Koeleria gracilis*, *Avena pubescens*, *Dactylis*, *Poa pratensis* and *Festuca elatior* all occur and most of these I saw on the Steppes in Czecho-Slovakia.

Onobrychis, Generis Revisio Critica, No. 5676, G. Sirjaev. Pp. 195, 1921; 165, 1926. No fewer than 126 species are described. The British plant is called *O. viciaefolia* Scop. It is the *Hedysarum Onobrychis* L., hence the *Onobrychis Onobrychis* of our List. Localities are given. The author has not escaped the pitfalls laid by written labels as, for instance, for this plant " E. Harnsey " should read " H. E. Garnsey " and "Headinglov, Oxon, 1893, H. Backer " should be " Headington, near Oxford, H. Baker." This monograph will prove most useful, and there is an immense amount of information compressed into its pages. No. 55. A sketch of the Distribution of Lichens in Moravia with regard to the conditions in Europe, by Jindrich Suza. Pp. 150, 1925. There are 288 species enumerated belonging to 34 families.

Iter Turcico-Persicum by Dr Fr. Nabelek, No. 35. Part I. Ranunculaceae-Dipsaceae. Pp. 144, tt. 16, 1923. Part II. Compositae. Pp. 58, tt. 12, 1925. Part III. Campanulaceae-Labiatae. Pp. 75, tt.7, 1926. The area explored was a large, varied and interesting one comprising as it did Palestine, including Hermon; Syria, where on the way to Damascus in August the author unfortunately had a severe attack of malarial fever so that it was not until November that he was enabled to go on to Aleppo; Babylon, which was visited in December; Basra and the Isles of Bahrein in the Persian Gulf in January. He then went to Mesopotamia reaching Mosul in May, but space does not allow us to pursue the itinerary, which he gives in detail, further. His gatherings exceeded 5000. The earlier part of his route was followed by the reviewer in 1925. Plantae Moravicae Novae vel minus Cognitatae, by Josef Podpera, No. 12. Pp. 35, 1922. This includes the hybrid *Carex vulpina* × *contigua* = *Otrubae* Podp., which ought to be found in Britain as should *C. glauca* × *panicea* = *C. Fontis-sancti* Podp. The whole contribution bears evidence of intense study.

Probst, B. Von. Dritter Beitrage zur Adventiv Flor von Solothurn and Umgebung, from Mittel-Nat. Gesilt. Solothurn. xx., 41-32, 1928. This is an extremely valuable contribution to the literature of adventive plants, and our Society is to be congratulated upon Dr Probst consenting to be our referee on them. In his preface he pays a great compliment to the authors of the Tweedside Flora. Although he has found nearly as many adventives as those which have occurred on Tweedside, there are very many which he records from Solothurn, which as yet have not been discovered in Britain, *e.g.*, species of *Tragus*, *Eriochloa*, *Panicum*, *Cenchrus*, *Eriagrostis* among the grasses, a sedge, *Carex Cyperoides*, a very unexpected plant, and several species of *Chenopodium* and *Amaranthus*. Britain has the advantage with the Leguminoseae. A new variety *Solanum nigrum*, var. *Probstii* and var. *glabrescens* Polgar are described, and there are many additional Compositae to Europe. We notice that a change of the trivial name is made in *Polypogon littoralis* Sm. which is antedated by that of *lutosus* Poiret, as pointed out by Dr Hitchcock.

Pike, Oliver G., F.Z.S. The Great Winding Road. Being the Adventures of a Naturalist on the Roads of Britain. With an introduction by the Rt. Hon. Lord Montagu of Beaulieu. Pp. 234, with 20 illustrations. Herbert Jenkins, 3 York Street, London, 1928; 7/6. Although not a botanical work, this is so well written and so admirably illustrated with life-like bird-studies that it will make a delightful companion to those of our members who travel by the open road in motor cars after their special quests. It is full of life and tragedy. The Death of the Phalarope, the Witch Dance of the Weasel, and the Battle of the Stags are very well told.

PODPERA, J. Quod Momentum significet *Carex pediformis* in Stepposis sylvaticis Europae Mediae. Public. Fac. Sciences, Univ. Masaryk, n. 101, 1928. There is a map showing its European distribution. Six varieties are described, as well as a sub-species.

POLGAR, Dr S. On a New Species of *Ornithogalum—O. Degenianum* from Hungary. Named after the great Hungarian botanist. Allied to *umbellatum*, it is a taller, earlier flowering species. A figure and details are given. Habitat: Dorfès Papakovácsi, in Westungarn. Magyar Bot. Lap., 19, 1928.

RAMANN, The Late Dr E. THE EVOLUTION AND CLASSIFICATION OF SOILS. Translated by C. L. Whittles, Ph.D. Pp. 127. W. Heffer & Son, Cambridge, 1928; 7/6. This is an attempt to summarise the fundamental facts of the formation of soils, to consider the close connection between climate and soil in greater detail, to indicate how soils are related to one another and so lead up to a classification of soil types which rests on a true scientific basis. The translator has endeavoured to adhere to the German text as closely as possible and on this point we can assure him his success is, if anything, too complete. For it must be acknowledged that the book is heavy reading. It must, however, lack the advantage which, had it been written on the soils of Britain, it might possess. On the very broadest lines there may be similarity, but for critical work in Britain surely British examples are imperative. It will serve a good purpose if it directs attention to the importance of the subject. The get-up of the book by Messrs Heffer is distinctly pleasing.

REDGROVE, H. STANLEY, B.Sc. SCENT AND ALL ABOUT IT. Pp. 100. W. Heineman, London, 1928; 3/6. In this small, compact volume of 100 pages our member has compressed a vast amount of matter relating to the History, Preparation and Composition of Perfumes in a well arranged sequence. The list of works consulted and quoted shows that its compiler has gone to the best sources of information and was wise in the selection he has made. The subject is a fascinating one. While modern chemistry has done much to assist the Perfumer, one feels that Mr Redgrove has perhaps somewhat overpraised some of the synthetic materials used. There is all the difference in the world to me between the whiff of heliotrope inhaled from a garden parterre and that which staggers one when bombarded by it from the stalls of a theatre, or between the grated part of a Vanilla bean and the all too pervading taste of its artificial analogue in modern confectionery. Chacun à son goût. Not only are the substances from which perfumes are obtained given but there are formulas for some of the more popular scents, such as Eau de Cologne, Lavender Water and Jockey Club. The recipe for the last reminds one of the old-time cookery book when we were told to make a cake by taking the yolks of forty eggs. To prepare it we are instructed to take "extract of Jasmine 3 pints, extract of Rose 2 quarts, extract of Tuberose 1 quart"—enough for a Goodwood meeting. The chemistry of the newer compounds is included and the process of Enfleurage described.

Richards, P. M. Ecological Notes on the Bryophytes of Middlesex. Journal of Ecology, xvi., 269-300, 1928. We most heartily congratulate Mr Richards, who for some years was our youngest member, upon the production of this excellent paper, the result of much personal field work and careful taxonomic study. Well written and well arranged, it is quite certain that his old tutor, Prof. Schroeter, will be greatly pleased to see such a graphic study of the Bryophytes of Middlesex by his promising pupil. Mr Richards added the very minute aquatic moss, *Octodiceras*, to the flora of Berkshire and Oxon (and we may say Paris) and he has also been able to include it among the Middlesex mosses. There are several Middlesex mosses and two Hepatics, *Lunularia cruciata* and *Hepatica conica*, preserved in the Dillenian Herbarium at Oxford. We shall hope to see other contributions from such a facile pen.

Riencourt de Longpre, Patrice. Notes Coordonnées d'Histoire Naturelle. Vol. i., pp. 244; vol. ii., pp. 245-614. Argo, Paris; 30 francs each volume.

Rockwell, F. Frye. The Book of Bulbs. A Guide to the Selection, Planting, and Cultivating of Bulbs, for Spring, Summer and Autumn Flowering—and to Winter—long beauty from Bulbs Indoors. Pp. 264, with many illustrations. Macmillan & Co., New York, May 1927. Reprinted, with corrections, March 1928; 3 dollars net. As the author says, the purpose of the book is threefold. First: to go with the reader out into the garden and to endeavour to show, by pictures and by text, what enchanting effects may be obtained with bulbs. Second: to help to introduce to the beginner some of the bulbs whose friendship he or she has not yet been fortunate enough to claim, and thus to create interest in this wonderful class of plants. Three: to give brief and comprehensive suggestions as to cultural requirements. That the author has succeeded in the threefold purpose is quite evident. There are excellent chapters on Tulips, Daffodils—of which a beautiful photograph is given showing them in a woodland scene, Hyacinths, Crocuses and others. One wishes the generic names were always spelt with a capital letter. Spiraea is spelt without a diphthong. Especially useful for American readers is the chapter dealing with half-hardly spring flowering bulbs. Gladioli and Dahlias receive their due attention and Irises and Peonies are also included, nor is the proper treatment against insects and diseases overlooked. The book is to be commended for its practical utility and clear expression of its author's views.

SCHROETER, C. Exkursionen in Ost. Java. Viert. Nat. Gesell. Zurich, pp. 554-600, 1928. We heartily congratulate our beloved Honorary Member on his safe return from his journey to the East. In this paper he gives, as was to be expected, a graphic account of his experiences in what is probably the most beautiful island in the whole world from a scenic point of view. Its vegetation makes it a place of supreme botanical interest. Naturally the Mangrove swamps (he photographs *Rhizophora conjugata* in situ)—the very antipodes of the Swiss mountains—attracted him greatly, but he gives each zone of vegetation adequate attention. See his *Casuarina* and *Alsophila* pictures. How he revelled, at 2800-3000 metres, among that extraordinary plant *Vaccinium varingiifolium*, *Photinia Notoniana* and the Myrtaceae, with a volcanic grass steppe composed of *Festuca nubigena*. That he has made this journey and come back safely shows his remarkable physical powers. We congratulate him upon his recent marriage and trust that his change of residence from mountainous Switzerland to lowland Holland may be all to the good.

SALT, HENRY S. OUR VANISHING WILD FLOWERS, AND OTHER ESSAYS. With an Afterword by Sir Maurice Abbot-Anderson. Pp. 86, 1928. Watts & Co., Johnson's Court, E.C.4; 2/6 net. The author deplores the diminution in the number of many of our species, the orchids being the conspicuous example. He alludes to the Summer Lady's Traces or, as he writes it, " Ladies' Traces," which was only once seen in the Wyre Forest and has long been known in the New Forest where year by year it becomes scarcer and more limited in its area. Its diminution was accelerated by a member of the Watson Exchange Club who gathered over a hundred specimens some years ago for distribution. The same diminution is noticeable in the plants of Teesdale. This district was raided by Mr A. Hume, a most reckless collector, who told me he had made about 10,000 gatherings. He did not, unfortunately, confine himself to the flowers but liked roots as well. Certainly the Gentian and Arenaria suffered terribly. After that admission, I never helped him to another locality, especially as he had just ravaged our Fritillary meadows and dug up bulbs galore. Fortunately such " Cainite " botanists are few and far between. The great damage is done by the dilettante or, we say it with bated breath, by the rampant growth of what is called Nature Study. " Always pull up the roots; there is so much botanical character which is afforded by the root," said one of these misguided and purblind leaders of the blind. The devastating effects of a host of these eager students upon a pasture is like that of a horde of locusts or the passing of a herd of grazing goats. Then there are the picnickers on their motor-bikes and the riders in cars who ravage the blue-bell woods or tear off branches of Laburnum and Rhododendron or strip our hedgerows of that wonderful display of what at one time George Eliot called " unmarketable beauty." There is some excuse for those who come from squalid alleys and foetid lanes, and one would not like to shut off the supply of Moon flowers, golden Marigolds, lace-like Hedge-parsley and Primroses from the dwellers in our large and crowded towns. But, like birds and beasts, flowers require sanctuary, and it is with this most desirable object in view that Sir Maurice Abbot-Anderson appeals for members to join his subscriptionless League. (See advt. of Flora's League.) The author gets rather excited over the splitter of species. He is one of those who, having acquaintance of long standing with certain familiar names, cannot but feel aggrieved when he sees them thus transfigured. He sometimes expresses too fretfully (might we not say too foolishly) his prejudice against the new comer, as in the following highly poetic verses:—

TO ORCHIS PRAETERMISSA.
A new variety of the Marsh Orchis.
[which it is not].

" Plain *latifolia* once we knew
With *incarnata*, her pale cousin,
Ere learned men did murder do
And split her into half-a-dozen.

Strange forms, distinguish them we can't.
[That we can readily believe]
There's one they've christened, deeming this a
Fit title for new-fangled plant,
The ' long neglected ' *praetermissa*.

And so for plain Marsh Orchid now,
We simple folk must mourn outwitted,
Ah! *praetermissa* would that thou
Hadst been forever pretermitted."

The perturbed state of mind in which " in a moment of frenzy " this sparkling ode was knocked off is evidenced by the fact that the word murderer is used to designate the creator of 5 new forms. The name *praetermissa*, which Mr Salt wishes had never been pretermitted, was deliberately chosen to give a tap at those who go about in swaddling clothes with purblind vision. If, as some maintain, there is an English *latifolia*, apparently well known to Mr Salt, surely the description of *praetermissa* in no way debars him enjoying his early love. The fact is that Linnaeus' description of *latifolia* does not apply to *praetermissa*. Probably Mr Salt would like only one English Elm, and that he would call *campestris*. Alas neither the descriptions, references, or specimens of Linnaeus agree, but that of course is of little weight with a sentimentalist. To him a rose by any name does not smell as sweet, if the rose happens to be a briar. Mr Salt quotes with sympathy a correspondent of his who grumbles at the 300 more species and innumerable varieties in the new edition of "The London Catalogue" and, *horribile dictu*, at the great number of new hybrids, making confusion worse confounded.

In calmer moments, and with a closer examination of the plants around him of which he is so fond and which he is doing his best to preserve, and looking at parallel instances in the political and religious world, I think Mr Salt will see that although one can harness the tides one cannot stereotype a living organism. It is curious that those most interested in devising new policies for the body politic are so tenacious of the modicum of scientific knowledge they possess. Some indeed might like to go back to the three divisions of the vegetable world as set out in a chapter of Genesis. But that would not be helpful to the student of nature. Mr Salt is terrified at the splitter's work, even with our British plants. Let him take heart of grace and rejoice that he is living in meat-eating England and not in the vegetarian East where Rice specialists have enumerated nearly 10,000 varieties of *Oryza sativa*. That apostle of the lumpers, Bentham himself, split the Linnean *Myosotis* keeping *repens* and *palustris* distinct. This action to the lumpers must have seemed anarchy since Linnaeus had one *Myosotis* to cover all our British forms. Also he had only one *Ophrys*. Does Mr Salt believe that the Fly, Bee, and Spider are all one species and that Hudson was a murderer because he made three " new-fangled " species out of the Linnean solitary species *insectifera*. The question of lumpers and splitters is as old as the hills and has become perennial. It is really a question of mentality. One remembers our infantile Philately where in our album, there was a space for a penny English red. Perhaps, like the plant-lumpers, we were just as happy when we filled it as those are who have a single sheet of a solitary *Taraxacum*. But the modern Philatelist who specialises has tints of colour, variations of paper, non-perforations, varied perforations and plate-numbers till his penny red English may run into 3000 spaces. So the ardent Taraxacologist must be prepared for a cabinet to hold 300-500 sheets of Dandelion. This to the lumpers is confusion and weeping and wailing and gnashing of teeth. They call the poor splitter an assassin, they would run him in for murder, hang him without trial of jury, and as for him who detects or thinks he detects a hybrid, let him be sunk in the sea a cable tow length from the shore as food for fishes. But even critics are not always consistent, for on p. 62 of his little book Mr Salt, writing on the goose-foots, protests against the omission from Johns' " Flowers of the Field " of " over half-a-dozen respectable Chenopods " for, on a dump, after we suppose passing the Rubicon, he saw "*C. rubicum* [*? rubrum*], a short branching plant with triangular leaves, rising to the height of 4 or 5 feet, next to a big plant (*viride*) which botanists class as a variety of *album* though, as it is entirely unlike ' type ' in general appearance, and in stature much taller, the layman [who views the splitter of the marsh-orchis as a murderer] finds a difficulty in regarding it under that head. *C. opuliforme* [by which we suppose the adventive *C. opulifolium* is intended; one strongly suspects that his *viride* is really *viridescens*] is at once the rarest and best looking of the group." The moral of this is that when an observer really observes a plant he is able to see the variations which the car-window or penny-a-liner-botanist has not been able to recognise in his cursory glance. Joking aside, there is just something more than freakism in those who make a special and intensive study of the micro-forms. Bentham was quite content with a big-thumb method. He called a grass, *Festuca ovina*, which was almost equivalent to calling a household, John Smith, because John Smith, his brother, his wife and a lodger were all living there. But that would not be enough for the census-taker, a classifier for which Mr Salt is specially bound to pray. In fact, there are strongly marked plants or species hidden in the Linnean *ovina*, occupying different habitats, needing different soils, and having different economical uses and values. To those who uphold the doctrine of evolution the knowledge of the segregates is of vital importance and, instead of upbraiding the student of these forms, the movement should be strongly supported. To me the weak point of ecology is that the study of the micro-forms is not paid so much attention to as it should be. Mr Salt urgently pleads for the preservation of our native flora and in this we are wholeheartedly with him. He cites the examples of the Cape Town Law, where the Silver Leaf was once in danger of eradication, and of the Swiss Nature Protection edicts. Norway, we may add, protects the Dovrefeld, and our Colonies are aware of the importance of the question. There is another danger which threatens the British Flora and that is the introduction of alien species, either by seed-sowing or planting, amid our native vegetation. The result of this will be that there will be a destruction of that spirit of research which has done so much to elucidate the composition of the British Flora. Any new discovery will at once be challenged and suspicion cast upon it as being merely the finding of a foreign species intentionally introduced. The craze was initiated, one is led to understand, by one who, not being content with introducing " honey stolen from France " into the body politic, thought it was a most wonderful thing to plant tulips upon Scafell and Crocuses on Ben Nevis. In these ill-chosen cases nature could take care of itself. The occurrence of *Aquilegia alpina* in a Scottish glen is tarred with suspicion as a mischevious person, it is said, once sowed seeds of alpines on the cliffs of Caenlochan. So what may perhaps be a native species has had to be starred in my *List* as possibly of alien origin. Sometimes the motives of these sowers are good, but oh what harm is done by the well-intentioned in every sphere of life. In some cases they will tell you when and what they have sowed, but sometimes tares come up with the corn. One cannot but think that *Dianthus gallicus* owes its origin to Mr Piquet's misplaced zeal in sowing seeds from Brittany in Jersey. He brought a packet of *Lagurus* from Guernsey to St Ouen's Bay in the seventies, and I saw his delight when it had spread to a patch that could be covered with a pocket handkerchief. Now it occupies very many acres and is a joy to behold. Again and again it is reported as a " native " of Jersey. On one of our Welsh mountains an encrusted Saxifrage was planted and it has maintained its hold. Recently it was found there and gave its discoverer great joy as he thought he had added a new plant to Britain until Miss Vachell showed chapter and verse of its original introduction. Seeds of *Linaria arenaria* from

Brittany were sown on the shore at Westward Ho by H. E. Evans. He intended telling me of this but the matter slipped from his memory until, some years after, it was found there by Dr F. J. Smith who sent it to the British Museum to be identified. I then went down to investigate and reported that, unless it was intentionally planted, it looked to be native. Then Mr Evans (who was the science master in Stalky & Co.) told me of his sowing it. Now it has spread to Saunton and will doubtless extend its range. Had not its origin been so quickly ascertained we should have had many false deductions made. I have starred in the *List Prunella laciniata*, *Teucrium Botrys*, *Euphorbia Cyparissias*, etc., as there is a haunting fear that they may not be indigenous. They may, however, owe their origin to more natural and indirect causes, to agriculture rather than to "the hairbrain scattering of irresponsible frivolity." The danger is, however, widespread and has even reached professional circles. Witness the suggestion to make Snowdon a receptacle for these misguided people to work their own will on. Mr Salt deprecates these maddest of all mad hatters' methods. He quotes Hudson—not the author of the "Flora Anglica," who knew better—as saying that the Columbine was originally planted by the Romans. No evidence can be produced for this; and it is not correct to say, speaking of England generally, that it is very local. In South Wales it is quite common. Mr Salt has a grievance against the large number of "introduced species"—specific variations for which I am responsible. My only regret is that the work of half-a-century on the British Flora should result in there being so few. One thinks that in the heat of his argument he has confused varieties with species. The majority of my species started on the lower grade as varieties, and it was only after protracted study and under very minute and not always friendly criticism, that I was led to raise a few of them to the higher grade of what he facetiously terms "intro-druced" species. This little joke we take in the friendly sense in which it is meant, but with a pinch of, we will not say, "attic" salt. We trust that his crusade in wild flower protection will go on successfully and that in these exertions the salt will not soon lose its savour.

Mr J. Edward Lousley in "The Common Weal Magazine," 441, 1928, has a reply to Mr Salt's criticism of The Botanical Exchange Clubs, from which we give the following extract:—"The author's misinterpretation of such examples as he has chosen weakens rather than strengthens his case against the Clubs, and it is as well that the true position should be known. It is pointed out (page 7) that 5262 plants were exchanged by the Botanical Exchange Club 'in one year,' an unqualified statement which is most misleading, for the total consists mainly of Knapweeds, Shepherd's Purses, Blackberries, Dandelions, and other critical species, and not of rare or pretty plants on the verge of extinction. Mr Salt cannot seriously maintain that the collection of such plants, even in large numbers, can do the very slightest harm to our Flora. Probably a non-botanist, weeding a field, will destroy more Shepherd's Purse in a day than British botanists have destroyed in a whole century! The fact that botanists call the plant *Capsella*, and recognise many different kinds, in no way alters the case. It is to be noticed also that Willows, Blackberries, Poplars, Roses, Mints, and other plants which figure so conspicuously in the Reports have their roots or runners left unimpaired, and the vegetative power of the plants almost uninjured. Surely no one can really begrudge us our weeds and 'intro-druced' species. But Mr Salt appears to regard the collection of such plants as 'a little queer.' Such aspersions have always been cast on innovators since the world began. The public can rarely see far enough ahead to realise where the thirst for knowledge will untimately lead, and in the present study of these minute plant variations a goal is, to my mind, already well in sight. There is the hope that in the study of one of these critical genera we may eventually discover the secret of producing hereditary variations at man's will—a discovery which will increase and cheapen the food supply throughout the world, and revolutionise the standard of living. But even supposing such a goal is never realised (and from the wheat analogy we may reasonably suppose that it will be), and that we are quite unable to see definite value in such 'splits,' surely those who care to should be allowed to continue their harmless hobby without let or hindrance. It may also be pointed out that there is often a minor utilitarian value attached to such study as, for example, the isolation of the Cricket Bat Willow from the Salices (cf. work at Kew). The inclusion of a name in a Botanical Report is no indication whatever of the number of sheets contributed, and as a rule an entry of a critical species represents a much larger gathering than that of a mere rarity. Thus I once sent the Seaside Everlasting Pea and the Picris Broom-rape to a Club, but there was only one plant of each, although entries appeared in the Report. A great function of the Reports, though incidental to the main purpose, is the correction of incorrect citations of scientific names, and the bringing into prominence of new ones. All those who have studied the subject are agreed that changes are necessary, and that by bringing our own names into harmony with those prevailing in other countries actual simplification results (of recent changes in the nomenclature of the genus Mentha bringing order out of chaos). Names are now on a much better basis than they were years ago and our successors will have cause to be thankful for the work leading botanists are doing to-day. Surely the sentimentality of such flower-lovers as Mr Salt will not stand in the light of posterity, progress must always come first. Why a list of hybrids should make 'confusion worse confounded' (page 27) I really quite fail to see. Hybrids do occur in nature, and if we are going to study plants we must be on the look out for them. A list of such hybrids as have already been found to occur is a warning sign to us to be prepared to discover them in our own 'finds.' Anyone who does not feel equal to such innovations is always at liberty to leave them severely alone."

Schulz, O. E. Beitrage zur Kenntnis der Flora von Chile. Notizblatt des Bot. Gart. u. Mus. Berlin-Dahlem, December 1, 1928. Pp. 460-475. Herausgegeben von E. Werdermann. Dr O. E. Schulz describes three new genera of the Cruciferae—*Hollermayera*, *Microcar-*

damum and *Werdermannia.* Herr Werdermann describes 5 species of *Salpiglossus.*

SHERRIN, WILLIAM ROBERT. AN ILLUSTRATED HANDBOOK OF THE BRITISH SPHAGNA (AFTER WARNSTORF). Foreword by H. N. Dixon, M.A., F.L.S. With illustrations. Pp. 74, tt. viii., and figures by the author. Taylor & Francis, London, 1927; paper 6/-, cloth 7/6 net. The author describes 48 species and 87 varieties. It may be noted that the varieties begin with *a* not *b*. Keys are given to the sections and sub-sections. The descriptions are excellent, but no details of the distribution are included.

SINGER, CHARLES. The Herbal in Antiquity. Journal of Hellenic Studies, vol. xlviii., part 1, pp. 52, July 1927. He puts the earliest Greek Herbal as that of Diokles of Karystos about 350 B.C., but it seems to have disappeared as have his other works. That of Theophrastus, 372-287 B.C., is the earliest that has come down to us. Of the Codex of Juliana Anicia, which was written about 512, Dr Singer believes that some of the figures of plants are by Kratenas, the rhizotomist who was physician to Mithridates, 120-63 B.C. There are good figures of *Papaver dubium, Adonis aestivalis* and *Asarum.* A full account is given of Dioscorides or, as Dr Singer writes the name, Dioskurides.

SIRJAEV, G. Revisio Critica Generis *Trigonella.* Public. Fac. Sciences, Univ. Masaryk, 1928. Having made us grateful for his revision of the genus *Onobrychis*, M. Sirjaev now gives us this very useful revision of *Trigonella* which he divides into 13 sections, and 2 sub-genera —*Trifoliastrum* Beck. and *Foenum-graecum* Sirjaev. With one exception none of the species are native to Britain, but several appear as grain and wool aliens. In this portion of the work 21 species are described including one new one, *T. Lipskii* Sirj., from Buchara, Russia.

SMALL, JAMES. A TEXT BOOK OF BOTANY FOR MEDICAL AND PHARMACEUTICAL STUDENTS. Second Edition, with over 1350 illustrations. Pp. 686. J. & A. Churchill, 40 Gloucester Place, London, 1929; 21/-. In reviewing the first edition of this work, which appeared in 1921 (*Rep. B.E.C.*, 351, 1921), the reviewer warmly congratulated the author upon the publication of a very useful Text-Book and predicted for it a wide circulation. This has been justified, and the publishers and author alike have earned warm commendations. In this edition Prof. Small says—" Alterations have been made in order to keep the summaries of carbon assimilation and geotropism up-to-date. A more direct method of determining the respiratory quotient is given. Acknowledgments are due to . . . . many of those who have used the book for suggestions and criticisms, especially to Professors S. C. Banerji and Sir Jagadir Bose of Calcutta. Alcoholic fermentation, diatoms, Myrtaceae, Rubiaceae and Caprifoliaceae are amongst the subjects which have been given somewhat fuller treatment. Many other minor alterations or additions have been made in order to bring the presentation of various parts of the subject into line with recently acquired knowledge." As a small matter one would suggest on p. 643 that instead of the name *Brassica sinapoides*, *B. nigra* should be used. *Sinapoides*, if used, should be relegated to the synonymy. The specific name of *Foeniculum* should be *vulgare*, if, indeed, the author cannot be induced to duplicate it as *Foeniculum Foeniculum*; so too with *Taraxacum*. *Centranthus* should be spelled with a *K*. On p. 438 "The Botanist's Pocket Book" is scarcely the correct title. There is a very comprehensive index. This Text-Book can be cordially recommended to all Botanical Students—it is essential for those preparing for Medical or Pharmacological Examinations.

Small, James, D.Sc. What Botany Really Means. Twelve Plain Chapters on the Modern Study of Plants. Pp. 199, 1928. G. Allen & Unwin; 5/-. It is recommended as just the book for those who want to know something of our present knowledge about plants without the trouble of mastering the meanings of any technical terms. Written in plain, simple English, it is an attractive account of the basic importance of the study of plants and plant-products as the materials upon which civilised life is based. The author makes his points clear by means of many analogies from every-day life and experience. The reader is led with humour and an almost poetic sympathy to a better understanding of the romance and the material significance of modern studies of plant life. "What Botany Really Means" is exactly the type of book which is required by teachers of Nature Study and elementary Botany. It is not a text-book, but it gives the living background which makes the difference between successful and unsuccessful teaching. Each chapter is based largely upon a half-hour talk broadcast to schools from the Belfast Station of the British Broadcasting Corporation. The general life-history of a plant is told in very easy language commendably free from too technical terms by one who knows his subject and has the power to introduce it to others. Especially good is the chapter on "Evolution in General" since, with homely examples, he shows what the nurseryman can do with common plants such as the Daisy or Dahlia. The book is a very welcome variant to the ordinary text-book. What a step from the repulsive Rennie which nearly strangled my botanical love in the sixties!

Soo, Dr Rudolph von. Revision der Orchideen Sudosteuropas und Sudwestasiens. Botanisch. Archiv., Leipzig. Band 23, pp. 196, 1928. In this important communication Dr Soó has placed a large amount of information before us. In his first group (pp. 5-8) 130 species are enumerated. On the nomenclature, we may remark that our *Cypripedium* is said to be *Cypripedilum* L., which it is not, but it has been amended (sic) to it. We are glad to see *O. fuciflora* is used, but *O. aranifera* Huds., spelled *araneifera*, is outdated by *O. sphegodes* Mill. The genus *Orchis* is made masculine: *O. purpurella* and *O. praetermissa* are both kept up as species, but not so *O. O'Kellyi* and *O. Fuchsii*. *O. hircina* is called a *Himantoglossum* and *O. pyramidalis* is made an *Anacamptis*. *Spiranthes gemmipara* only is given, and, quite correctly, *Epipactis* replaces *Goodyera*, which is likely to arouse opposition. *Helleborine* is correctly used and six species are given of which *palustris*, *latifolia* and *atropurpurea* are British. *leptochila* being made a sub-species. *H. purpurata* is, I think, unjustifiably made synonymous with *latifolia* as is *atroviridis*. *H. varians* sub-sp. is given for Britain. *Orchis maculatus* is treated too comprehensively, *i.e.*, sub-sp. *transilvanicus* Soó, sub-sp. *macrostachys* Soó, sub-sp. *helodes* (which he is unfortunately led to use, " sec. Colonel Godfery," = *praecox* Webster and *ericetorum* Lint.). He has forma *trilobatus* Bréb. which is wrongly made synonymous with *O. Fuchsii* and sub-sp. *macrostachys* (Tin.) Soó. Let us see what Brébisson says about *Orchis maculata*. " *Labelle large, trilobé dentée, à lobe moyen petit, court, aigu, entier.*" The italics are Brébisson's. Anyone who has studied orchids in the field knows at once that this applies to typical *maculata* of Linnaeus. Brébisson's *trilobata* "épi grêle; fleurs petites, labelle à trois lobes profonds, presque égaux " does not agree with *O. Fuchsii* which is not slender and has not small flowers. The description is much nearer *O. O'Kellyi*, and had it been described with white flowers *O'Kellyi* need not have been separated. Irish botanists think it is a good species. Dr Soó does not deal with *candidissima* of Gilibert which precedes *elodes* but is itself subsequent to *O. maculata* L. Under *Cephalanthera* the name *latifolia* is used, citing it from Miller, 1768, with Janchen as the authority for the combination, but Miller's first species in the Gardeners' Dictionary of 1768 is *Serapias Damasonium*, based on specimens from Stokenchurch in Oxfordshire, whence *ensifolia-longifolia-alba* has not been found. The description is good, and fits this beautiful species. Therefore *Cephalanthero Damasonium* (Miller) Druce is the correct name, and his specimen in Hb. Brit. Mus. agrees (see *Journ. Bot.*, 442, 1907). *Serapias latifolia* of Miller, possibly may be the same thing, as his specimen, so labelled in Hb. Brit. Mus., is *H. Damasonium*. One may say that in the text Soó uses the name *Peramium repens* Salisb. for *Epipactis Goodyera*, but *Peramium*, although used by Salisbury, is unaccompanied by a description and is a nomen nudum. It is better at once to face the music and use *Epipoctis repens* since that genus later on became an olla podrida. Despite these comments, which it seemed necessary to make, great praise must be given to Dr Soó for the great amount of useful information given and for the very numerous habitats cited. We are greatly indebted to him for his laborious study. Later on I hope to supply him with more precise information upon some of the plants and on their nomenclature. I hope he will pardon me, but much of the taxonomic matter is hidden in publications not easily accessible to the continental botanist.

SPRAGUE, T. A., B.Sc. THE HERBAL OF OTTO BRUNFELS. Journ. Linn. Soc., 79-124, 1928. In this careful piece of work Mr Sprague has, after giving a short sketch of the life of Brunfels, explained the preparation of the Herbal, of which the first volume was published in Latin in 1530 as " Herbarium Vivae Eicones." A second appeared in 1531, and a third, posthumously, in 1536. A German edition was issued in 1532 under the title " Contrafayt Kreüterbuch." My own copy, in contemporaneous binding, with traces of the metal clasps, is in extraordinarily good condition. I had it from the library of D. Henry in Paris. It is labelled "Herbarivm Oth. Brunfelsii Tomis tribus Exacto tandem studio, opera et ingenio, candidatis Medicinae Simplicis absolutum. Quorum contenta, Index cujusque Tomorum suo loco explicat. Argent. apud Johannem Schottum, 1539." It contains 233 pages. Information is given as to the sources of the text and the draughtsmen. Church (*Journ. Bot.*, 236, 1919) thought they were done by Brunfels himself. Mrs Arber suggests that Hans Weyditch was responsible for the drawing as well as the engraving. Sprague thinks that Brunfels was not responsible for the drawings, which were executed, under the supervision of Weyditch, by a staff of draughtsmen and engravers. There are notes on Nomenclature and Taxonomy; Superstition and Fable; the Ferns, male and female; Garden Flowers; the Scientific Value of the Herbal and the Identification of the Figures. He thinks that 47 species figured are new. Over 60 figures may be assumed to be the types of the Linnean (book) species. Where there is evidence that Linné's description of a species was based on his herbarium specimens, that should of course be regarded as the type. Whoever drew the plants evidently drew them in a hot studio for so many of them show signs of wilting. Even the water-lily leaves are incurved at the edge. It is curious that Mr Sprague adopts the name *Maianthemum* from Weber's "Flora" but rejects that of *Bursa* which dates from the same volume and, like some other writers, throws over the Bentham & Hooker system. 285 figures are dealt with. Sprengel attributed at least 50 figures to Fuchs which were previously figured by Brunfels and 9, said to have been found in Germany by Tragus, were also previously figured by Brunfels. A systematic conspectus of species figured, an index of their accepted scientific names, and one of Latin and German names used by Brunfels are given, as well as a complete bibliography. It is a most excellent and useful piece of work which leads us to look forward to a similar work on the Herbal of Fuchs.

STANSFIELD, F. W., M.D. The British Fern Gazette, the organ of the British Pteridological Society. President, W. B. Cranfield; Hon. Secretary, F. W. Stansfield, 120 Oxford Road, Reading. Yearly subscription, 10/-. There is an illustration and description, on p. 240, of *Blechnum Spicant ramo-cristatum* Blow, found near Axminster, Devon, by our ever active member, Mr T. Bates Blow. It is said to be a fine variety, quite distinct from anyone previously found.

STEPHENSON, Dr T. Southern Marsh Orchids. Journ. Bot., 97, 1928. *Orchis sesquipedalis* and its forms.

STEPHENSON, DR T. Les Dactylorchidées en France et en Grand Bretagne. Bull. Bot. Soc. de France, vol. 65, cinq. sér., iv., 481, 1928. In an excellent paper he treats of *O. maculata, latifolia, incarnata, praetermissa* (with a good figure), *sesquipedalis, maculata* (forme A. *Fuchsii* with an excellent figure), forme b. *eu-maculata* (which he calls *elodes*). The identification of the latter is very doubtful, and certainly does not represent the usual British plant; in any case the name is superseded by *O. candidissima* (Gil.) Dr., as that name itself is by *O. maculata* of Linnaeus.

Sutton, M. J. Permanent and Temporary Pastures. Revised by M. H. F. Sutton in collaboration with Prof. J. Percival. Edition 9, pp. 202, 1929. The Gold Medal of the Paris Exhibition was awarded for the edition of this work containing the illustrations in natural colours. The previous editions of this handsome work have been favourably reviewed in these pages, and in this one we must draw special attention to the excellent figures of grasses and clovers, as well as to the analysis of their composition. *Festuca pratensis*, *F. elatior*, *F. ovina* var. *tenuifolia*, which one would have preferred seeing raised to a full species. *Phleum pratense*, which is described as somewhat stoloniferous so that the Scotch Timothy, *intermedius*, is excluded, *Poa pratensis*, *P. trivialis*, *P. nemoralis*, of which a stout-leaved form is figured, are among those illustrated. *Achillea Millefolium* is also well drawn. It might pass as our var. *conspicua*. On p. 41 a small variety of *Festuca ovina* "with fewer leaves," small one-sided panicles and flowering glumes which are awnless or bear but a short hook, is known as Fine-leaved Fescue, but should not this be put under *F. ovina* var. *tenuifolia*? Is this especially a chalk plant as stated? I have seen it most typical on acid soils. Is *Festuca elatior*, as figured, distinct from *F. arundinacea* Schreber? We can cordially recommend this work to any who are interested in pastures.

Tansley, A. G., M.A., F.R.S. The Future Development and Functions of the Oxford Department of Botany. An inaugural lecture delivered before the University of Oxford on November 22, 1927.

Tarouca, Ernst Graf Silva und Camillo Schneider. Kulterhandbucher fur Gartenfreunde. Band 1. Unsere Freiland-Stauden. Pp. 417, tt. 449 + 13 farbigen bildern. Holder Pichler Tempsky A. G., Wien, 1927. This beautifully and copiously illustrated work for garden lovers is to be completed in three volumes of which this, the first, appeared in July 1927. The delightful plates represent semi-hardy plants grown in gardens and parks at Edinburgh, Glenside, Phoenix Ville, Frankfurt, Sansouci, Pruhonitz, Boston, Dresden, Kew, etc. There are excellent cultural notes. A terse description is given of the numerous attractive garden plants which are copiously and beautifully illustrated, most of them having been photographed from living plants *in situ*. The specific name is given without the author's name. When a plant has two or more synonyms cross-references are given, *e.g.*, under *Dielytra*, it is said, "see *Dicentra*." Much as it may be detested by horticulturists surely the older name is *Capnorchis* Miller which dates from 1759. *Epipactis* is still kept up. Possibly *Ipomoea Jalapa* might have been included as it is almost hardy if grown in sheltered places. We are glad to see *Linaria pallida* given. The name, *Nymphoides peltatum*, is used, but the oldest specific name is not given. An extensive chapter is given to *Phlox* as also to *Primula* and *Saxifraga*.

The Bracken appears as *Pteridium*. The oldest name of *Sagina Linnaei* is omitted: it is *Saginoides*. The Hart's-tongue appears as *Scolopendrium*, but *Phyllitis* appears as a synonym. A wonderful field of Tulips from Haarlem is shown and one of *Urospermum Dalechampsii* from Verrières. To those horticulturists who read German this work will prove of high value, while the lovely pictures will appeal to everyone in a tongue of their own. The book is well printed and singularly free from type errors.

TAUNTON. The Botanical Section Report Secretary, W. D. Miller. *Verbascum thapsiforme* has apparently disappeared from Hodder's Combe, and so, too, it is to be feared, has *Teesdalea* from the county. About 130 new stations have been recorded. The var. *minor* of *Erodium moschatum* from Purn Hill reverts to type in cultivation. Either the variety is a mere form or a wrong identification was made by its finder, the Rev. E. S. Marshall.

THELLUNG, DR ALBERT. Die Ubergangs-formen von Wildhafertypus (*Avenae agrestes*) zum Saathafertypus (*Avenae sativae*). Reprinted from Rec. du Trav. Botan. Neerlandais, vol. xxv., 1928. A melancholy interest surrounds this, probably the last, printed material compiled by our valued member. He describes 21 varieties or forms of *A. fatua*. He divides *A. sterilis* into two sub-species and several varieties, and *strigosa* into 2 sub-species—true *strigosa* with 3 varieties, and *barbata*.

THURSTON, EDGAR. Notes on the Cornish Flora. Roy. Soc. Cornwall, 1928. Contains a number of records, including *Mentha rotundifolia* × *viridis*, Watergate, near Newquay, and *Ulmus vegeta* Lindl., Liskeard Road, Collington. *Carex Pseudo-cyperus* L., Pentewan, already recorded in our *Reports*, is new to the Flora.

TURRILL, W. B., M.Sc. The Plant Life of the Balkan Peninsula: A PHYTOGEOGRAPHICAL STUDY. Pp. xxii., 490, 11 maps. Oxford: at the Clarendon Press, 1929; 30/-. The preparation of this important volume has been a very laborious task, which began when the author was with the British Forces in Salonika. Most of 1917 was spent in Greek Macedonia, and since the war the Balkan Peninsula has been visited on three occasions so that the salient species of that area came under his notice in his twelve years' research. This field work has been supplemented by a careful search not only in the great Herbaria in Britain—Kew, National, Oxford and Linnean, but also in Vienna, Budapest, Belgrade, Sofia and Trieste. His connection with Kew Herbarium, so rich and complete in the species belonging to the area discussed, was of course an immense advantage. The amount of detailed knowledge thus acquired is almost overwhelming. The danger that had to be faced was how to utilise it without endangering the cogency of the argument which could be educed from it. The reader, however, will find that the main line of thought—What is the origin of the Balkan Flora—has not been obscured. Produced as it is by the Clarendon Press, it is needless to say that the typographical details are excellent and the few photographs —would that there had been many more—are very good. Prof. Tansley, the editor, not only writes a commendable but a commendatory preface, in which he says—"Mr Turrill has analysed the composition of the flora of the different regions of the Peninsula, of the different habitats, and of the different altitudinal zones in almost every conceivable way. Most of his statistical analysis will of course be of importance mainly to special students of the subject, but many of his chapters have a much more extensive interest. Mr Turrill shows conclusively that the flora of the Balkan Peninsula owes a great deal to immigration from Asia Minor. His able analysis of the relations of the Balkan Flora to that of the neighbouring regions of Europe, Asia, and Africa and his conclusions as to the main lines of plant migration into and out of the Peninsula, form one of the most original and valuable features of the work." There are seventeen chapters, each packed with material and, many, perhaps almost too many, tables. He divides the immense area he treats of into sixteen groups and seven sub-groups:—(1) Crete, with 3300 square miles, the fifth largest Mediterranean island, 1432 species of phanerogams, 131 being endemic. (2) Peninsular Greece, with some islands, 19,000 square miles, 2973 species, 260 endemic. (2) The Cyclades (that very interesting group of islands), 1040 square miles, 1106 species, 33 endemic. (3) Thessaly, 5000 square miles, 1972 species, 51 endemic. (4) Epirus, 5500 square miles, 1074 species, 12 endemic. (4a) Corfu and small islets, 300 square miles, 918 species, 3 endemic. (5) Albania, 8000 square miles, 2059 species, 46 endemic. (6) N. Macedonia, 11,000 square miles, entirely inland, 2116 species, 54 endemic. (6a) S. or Greek Macedonia, 14,000 square miles, 2135 species, 19 endemic. (6b) Athos, 140 square miles, 723 species, 16 endemic. (7) Thrace, 10,000 square miles, 2148 species, 30 endemic. (7a) Lemnos, Imbros, Samothrace, 355 square miles, 142 species. (8) N. Bulgaria, 24,600 square miles, 2500 species, 56 endemic. (8a) S. Bulgaria, 12,000 square miles, 1733 species, 28 endemic. (8b) Rodope massif, 7800 square miles, 1847 species, 47 endemic—it has in Musalla the highest mountain of the Balkans. (9) Dobruja, 6000 square miles, 1298 species, 27 endemic. (10) Serbia, 18,700 square miles, 2470 species, 7 endemic. (10a) Sandjak of Novi-Bazar, 6000 square miles, 228 species. (11) Montenegro, 3630 square miles, 2362 species, 20 endemic. (12) Bosnia, 16,233 square miles, entirely inland, 2222 species, 22 endemic. (13) Herzegovina, 3527 square miles, 1940 species, 11 endemic. (14) Dalmatia, 4956 square miles, 2292 species, 25 endemic. (15) S. Croatia, 4800 square miles, 2160 species, 7 endemic. (16) Istria, 2300 square miles, 1970 species, 7 endemic. The total coastline is 11,100 km. The Danube drains about a third of the area. A good account of the Geology and Soil is given, as is also that of the climate. Many pages are devoted to treating of Plant Communities and Plant Succession. That on the influence of man on the flora has many points of interest with some good illustrations. The malign influence of goats upon vegetation is noted, and it is stated that in Bulgaria alone there are nearly nine million sheep. For the whole peninsula the flora consists of 0.4%

Gymnosperms, 15.9% Monocotyledons and 83.7% Dicotyledons. The author, like some other of his colleagues, deserts the system of Bentham and Hooker and follows that of Engler. He estimates that of the 6540 species recorded for the area 1754 are accepted endemics. Among these he does not single out for special attention that most beautiful *Helicrysum* named after the Isle of Amorgos in the Cyclades. Willis' "Age and Area" hypothesis is discussed, and in the general conclusions well reasoned suggestions are given. A new word "hamagenesis" is coined to replace syngenesis, which is used in a distinct connection, meaning evolutionary changes in a whole species or a mass of individuals of a species at approximately the same time. The index is good. Our member is to be most highly congratulated upon producing such an able contribution to Ecological literature. One may add that it must have been an inducing factor in his obtaining the well-deserved Doctorate of Science from London University.

UNWIN, DR A. H. A Short Description of the Forests of Cyprus. Pp. 28, 1927; 2/4½. This excellent pamphlet mentions that Cyprus is the third largest Mediterranean Island, with two main ranges of mountains:—(I.) The Northern, comprising the Kyrenia and Karpas mountains extending to about 100 miles. (II.) The Southern range of Troodos, Paphos-Kykko, etc. The rainfall is small, ranging as at Morphou, 256 feet above sea level with 10.27 inches to 61.89 inches at Halevga, situate at 2500 feet in the middle of the Northern range. There are four main types of forest in the Northern range. (1) Pure high forest of Aleppo Pine, *P. halepensis*. (2) Mixed high forest of *Pinus halepensis* and *Cupressus*. (3) Pure Cypress forest. (4) Mixed Olive, *Arbutus*, *Quercus coccifera* and *Juniperus phoenicia*. In the Southern ranges and Massiv there are:—(1) Pure Aleppo Pine forest, which reaches to 4000 feet. (2) Pure high forest of Corsican Pine, *Pinus nigra* var. *pallasiana*, between 3500 and 6400 feet on the Troodos range. (3) Pure Cedar forest, *Cedrus brevifolia*. (4) Dwarf Oak, *Quercus alnifolia*. (5) Mixed Plane and Alder, *Platanus orientalis* and *Alnus orientalis*. (6) Orchard type of hardwood Carob or Olive. (7) Juniper forest. (8) Oak forest, *Quercus lusitanica* and *coccifera*, in the Paphos district and also at Evrychou. The largest forest is that of the Paphos and Kykko which extends over 232 square miles, the highest point being 5100 feet. The State owns 96% of the total forest area which occupies about 640 square miles. Many trees have been introduced under the enthusiastic energy of Dr Unwin. They include *Ailanthus glandulosus*, *Eucalyptus tereticornis*, *Acacia cyanophylla*, *Juglans regia*, *Pinus Pinea*, *Cedrus deodara*, *Cupressus macrocarpa*, *Gleditchia triacantha*, etc. The effect of afforestation in increasing the all too scanty rainfall is quite definite.

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D.C. We have alluded before to the gigantic output of this important department, and this is still maintained in all its vigour. Circular n. 23, 1928, is a very useful pamphlet on "A score of easily propagated Lilies," by David Griffiths. It is well illustrated and is cram full of information.

The first of the score is *L. candidum*. *L. regale*, which we have already noticed, is likely to be one of the most successful as it is one of the most noble of the group. A single plant in Puget Sound had 22 pods, yielding about 10,000 seeds. Circular n. 31 treats of Japanese Flowering Cherries of the Yorkshire Single Pink variety. Nearly a thousand trees border the tidal basin in Potomac Park, Washington. Some attractive pictures are given.

United States Department of Agriculture. Bibliographical Contributions. Author and Subject Index to the Publications of Plant Pathology. Issued by the State Agricultural Experiment Stations, April to December 1927. Compiled by Jesse M. Allen, Librarian Bureau of Plant Industry. Pp. 251 (typed), July 1928. This contains a delightfully illustrated paper on the *Meconopsis* and Gentian at Devon Hall, Perthshire, by A. Harley, Esq. Mr W. Hales, A.L.S., gives an account of Horticulture in the Tropics, and justice is done to the gardens in Ceylon, Penang, Java and Singapore.

Van Steenis, C. G. G. J. The Bignoniaceae of the Netherlands Indies. Bull. Jard. Bot. Buitenzorg. Pp. 173-290, 1928. Seven species of the Bignoniaceae are given, 46 of the Tecomeae, 4 of the Crescentieae and 1 *Hieris*, the group of which is uncertain. There is a good key. The beautiful climbing *Venusta*, which is such an ornament to the Riviera, is now put in the genus *Pyrostegia*. The showy *Spathodia campanulata*, a tree up to 70 feet high, was much injured this year in Teneriffe by the wind-blast. Mr Van Steenis describes three new species of *Radermachera* from Sumatra, Celebes and N. Borneo respectively. The most lovely *Jacaranda* comes from S. America and the Antilles. *Colea Colei* is very near a duplicated binomial. *Hieris* is another new genus, founded by the author on an endemic Penang species. It was named *Tecoma Curtisii* by H. N. Ridley. There is a good bibliography and index and, heaven be thanked, the text is in English.

Wales, National Museum of. 21st Annual Report, 1927-8. This excellently managed and well organised Institution makes great progress. It is always a pleasure to visit the well-proportioned rooms and to see the well-set up and well-kept specimens. 17,282 additions were made during the year to the Herbarium. This included the Herbarium bequeathed by our member, the late Dr W. A. Shoolbred. A new feature in the Museum is the most excellent modelling of fungi and other plants by Miss E. A. Jenkins. This proved to be a very popular exhibit in the gallery. The Museum was visited by over a quarter of a million people in the twelve months.

Ward, Henshaw. Charles Darwin: The Man and His Warfare. Pp. 472, tt. 27. John Murray, London, 1928; 21/-. "There have already appeared several lives of Darwin, but this is different inasmuch as it gives a sympathetic and searching study of the man, his life of action and research and writing, the growth of his opinions and the meaning of his life in modern science. He describes Darwin's life of warfare against superstition in science and, in the fascinating chapters devoted to that splendid story of travel and adventure in the 'Beagle,' shows what were the causes of the battles. The growth of Darwin's theory is told as part of the story of his life and reveals him, not as merely one of a flock of evolutionists, but as an original and profound thinker developing his unique theory. Only a little less interesting than the full-length portrait of Darwin are the sketches of his associates—Lyell, whose 'Principles of Geology' has so stimulated Darwin on the 'Beagle' voyage; Hooker, wise and devoted; Huxley, ever ready to break a lance for the truth; Wallace and Asa Gray. The very brilliance of this group enhances the dominant figure of Darwin, while the quality of entertainment is strong throughout the whole of the book." The cover supplies the above outline of this charming volume and well epitomises the scope of the work. As with Bateson, Darwin found his school-work at Shrewsbury, under Dr Butler, which he entered when he was only nine, repulsive. In after years he said—" Nothing could have been worse for the development of my mind—as a means of education it was simply a blank." He was yearning for something besides memory work so at home he took up chemistry and learned how to make "all the gases" which earned from his school-mates the nickname " Gas," and from Dr Butler the epithet " poco curante." He had his solace in collecting insects and birds' eggs after school hours, although he could never take more than one egg from a clutch. How different indeed from A. E. Hume who took all. At the age of 16 he went to the Medical School at Edinburgh where, seventy years before, his grandfather Erasmus had taken his M.D. There he continued his collecting. The Crustacea chiefly attracted him, and there he discovered an organism which later on was described by his mentor, Dr Grant, in his Monograph on the Flustra. Thus Dr Grant, early in his course, became his friend and profoundly influenced him. The author then describes his life at Cambridge where he became nearly an ordinary Undergraduate save that he was a keen collector of Beetles which no ordinary student ever was. Then came the chance of his life—an opportunity of an extensive sea-journey. In 1832, with Captain Fitzroy in the small ship the Beagle. which was to win a never-ending renown owing to the young Naturalist. he was rather reluctantly taken on as research student. The salient points in the account of this journey have been seized by Mr Ward and many are the incidents selected for comment. Equally entrancing are the references to the six years on the Coral islands, and to the theories which the islands suggested. The well-laden mind of Darwin was stronger than his body which never conquered the attacks of mal-de-mer. His home-coming, as he passed through Salopian fields, presented men and things at a different and a wider angle than when he left. " How different the world had grown in five years! Now every shrub beside the road spoke of a virility that could go over seas and spread itself against the competition of plants in Argentina or New Zealand. These decorous ornaments of a placid English landscape were warriors now. A hare that scurried off the road was a noticeable fighter in the struggle for existence, a species that could vary a descendant from ancestors entombed in the ancient pyramids of nature. The hills, which used to be curiosities, were now a part of the grand symphony of lofty Andes and deep sunk coral-crowned peaks. Every pebble or autumn leaf told of roaring torrents or petrified forests that still stand on their ancient seashore in the mountains." The after pages are occupied with Darwin's four years' life at Downes and eight years spent in investigations on Barnacles, in which is interposed a delightful sketch of Huxley. Then comes the writing of the "Origin of Species," 1854-9. Here are inserted vivid notes on Asa Gray whom Botany had claimed for her own. The account of Darwin's consternation when the news reached him of the work on the same subject by Alfred Russel Wallace is well told. The result is to heighten one's opinion of both Darwin and Wallace. The chapter on the " Reception of the Origin, 1859-1870, is fascinating, as is that devoted to the years 1860-1881. The home life at Downes fitly finishes an excellent appreciation of the great naturalist.

WATSON BOTANICAL EXCHANGE CLUB. Vol. iii., No. 11, 1927-8. Distributor: J. E. Lousley. Hon. Secretary, H. Stuart Thompson; Hon. Treasurer, G. Goode, M.A. 2032 specimens were sent in of which 350 came from Austria, sent by Dr K. Rechinger who identified *Salix atrocinerea* among our British Salices. There are brief biographical references to the Rev. E. F. Linton, St John Marriott and Dr Shoolbred by the Secretary. Under *Solidago Virgaurea*, a critic asks if anyone has cultivated this variety? If the querist refers to the "Hortus Elthamensis," where *S. cambrica* was first described under a pre-Linnean name, he will see that such culture has been made. It has been repeatedly cultivated by Mr J. Griffith of Bangor, and its distinctive characters from ordinary *S. Virgaurea* are well maintained. In *Rep. B.E.C.*, 283, 1921, I gave the history of the plant and of the mistakes made concerning it. So far, I have not been able to see *S. cambrica* elsewhere than in Snowdonia. In my own garden, as long as it lived—and I do not think it is a long lived species—it kept true. We may note that *Cardamine amara* L., var. *erubescens* Peterm., is thought to be the first British record. A superficial knowledge of British Botany only was needed to show that this is not the case. See *Fl. Oxford*, 35, and *Rep. B.E.C.*, 637, 1919. It is an old record = var. *lilacina* F. B. White which was published in *Scot. Nat.*, 299, 1889, and also in *Fl. Berks*, 47, 1897.

WILD FLOWER MAGAZINE. Editor, E. V. Dent. No. 186. W. D. Miller contributes a paper on The Disappearance of Rare Plants, and Col. A. H. Wolley-Dod writes on the Oxlip. No. 187. On p. 11, it is stated that *Solidago cambrica* has been seen in two places in Surrey, named by me. There is some error. I have never seen it from Surrey—a county in which it is not likely to be found unless planted. No. 188 contains a portrait of the Secretary of the B.E.C., and a condensed biography. No. 189 contains a note on the marriage of Miss Dent and of the presents sent her by the members. Sir A. Abbot-Anderson gives a note on the Quest of the Golden Gagea. Flowering spikes of *Phalaris* *arundinacea*, 5 ft. 9 in. high, were found by Miss Beddington at Floss, Cumberland. No. 190 contains the article on "Flora's League," by E. V. Lucas, reprinted from the "Sunday Times." Mr W. Miller sends a note on *Menziesia caerulea* on the Sow of Athol. No. 191 is memorable for its containing this note of a Conversazione given by the members to their President, Mrs Dent, in recognition of her work. The Conversazione took place at the Great Central Hotel in London on Wednesday, November 14. This was a brilliant inspiration on the part of Miss Bacon, carried out most ably and successfully, and all present must have been deeply grateful to her and her helpers for giving them such a delightful time. The Great Central is an enormous hotel, and threading one's way through a crowd of Rotarians who were also holding a meeting there, one came to a large room with dozens of little tables arranged for tea. In recesses were tables with all sorts of beautifully pressed and painted flower pictures and specimens, the work of our talented members. Among these may be mentioned the beautiful flowers preserved in sand by Mrs John Godden (similar to those of hers exhibited at the Natural History Museum); Lady Davy's delightful paintings of the British orchids; Miss Greenaway's pictures of fungi; quite marvellous pen and ink drawings for Mr Butcher's forthcoming addition to the illustrations for Bentham and Hooker. Mr Tahourdin, too, most kindly brought some of his well known orchid pictures, and there were clever sketches by Mr Dalgleish, Miss Alice Cole, Miss Saunders, Miss Mason, Mrs Teago and others whom there is not space to mention. Among the pressed specimens Mrs Jennings showed the Roman Nettle which has so long eluded us; while Dr Druce, Mr Foggitt, Mr Miller, Mr Little, Miss Bacon and several others contributed collections which were much appreciated. An album of the "Alien Competition" (the work of many members) was on view, and in a separate place was a selection, most kindly lent by Dr Druce, of the incomparable paintings of the Brambles, the work of that most gifted botanist (member of the W.F.S.), Miss C. G. Trower, whose deeply lamented death had occurred only a few days previously. We were indeed grateful for being allowed to see such treasures. There was also an excellent "trade" exhibition of vasculums, presses and other botanical paraphernalia by Messrs Flatters and Garnett, of Manchester. The President was handed a beautiful bouquet of carnations on behalf of the members, and before three o'clock (by request) began to receive the guests. It was a thrilling moment, as each was announced, to see the faces of those one knows so well by long and friendly correspondence; and on looking back my one and only regret was that it was impossible to speak to them all, and a mere handshake little represented the interest and kindly feeling that was meant. One of the first to arrive was Dr Druce, F.R.S., who is held in such affectionate esteem by all who know him, not only for his great knowledge of botany, but for his kindliness and great enthusiasm. No less than twenty Branch Secretaries, past and present, soon arrived, namely, Miss Richards (A), Miss Pickard (C), Miss Saunders (F), Miss Brown (G), Miss Hall (H and M), Mrs C. M. R. Schwerdt, our late Hon. Secretary (N^1), Miss H. Dent (N^2), Mrs Godden (P), Rev. D. M. Heath

(Q), Hon. Mrs Baring (R), Miss Milsome (S), Miss Tucker (T), Mrs Stewart (U), Mrs Davies (X), Miss Robinson (Y), Miss Bacon (Z and H), and past Secretaries—Lady Davy, Mrs Sandwith and Mr Noel Sandwith (of Kew), and Mrs Jenner. Mr Waterfall (W) and Miss Salmon (K. and L), and Mr Green (late J) had also accepted, but were most unfortunately prevented by illness and other causes from coming. Altogether a wonderful muster. About one hundred and twenty members and their friends were present, and among those we were glad to welcome (beside collecting members in crowds) were Mr C. E. Salmon, Mr Little, Mr Foggitt, Mr Francis Druce, Mr R. W. Butcher, Miss Vachell, of Cardiff, Sir Maurice Abbot-Anderson and Col. Wolley-Dod, all very well known Field Botanists; Mr Tahourdin (author of books on Orchids), Lady Victoria Russell, Lady Farren, Col. G. Dixon and many other well known people. I mention this galaxy of celebrities to show how much those who were unable to attend the Conversazione have lost. Every Secretary and member present had little tickets attached with the letters of their Branches, and soon the Secretaries were hunting for their members and the members for their Secretaries. Indeed, Miss Hall told me that she had found twelve out of the 102 members who had been in her Branches. It was wonderful to see the happy and interested faces of the members as they moved through the crowded room, and such a spirit of friendship and good-will pervaded the whole assembly that only the lovers of nature could bring. At four o'clock a most sumptuous tea was provided and the Secretaries tried to collect their own flocks at their different tables. After that the room was cleared and the President and Dr Druce were placed on a low platform with Dr Druce in the chair. He began by feelingly alluding to the recent loss of our distinguished member, Miss C. G. Trower, who had passed away that week, and this was received by all standing in sympathetic silence. The President then delivered her speech. She began by congratulating Miss Bacon on her happy thought, and thanked her most heartily for making this great meeting possible and carrying it out so successfully. She then thanked all the Secretaries for their unfailing help. They were the props of the W.F.S. and without them the Society would fall. We have now, she said, 25 props, good strong solid ones, and of these Miss Bacon's broad back bore a large portion of the burden. " She has at least 30 or 40 members in her Branches, which include our most able members, and she it is who thinks out various competitions, excursions and articles which add so much interest to the Society. Another staunch prop is Lady Davy. For many years she has been a referee of the Society and perhaps it is not kind to mention how many years she has been a Secretary. Her knowledge of wild flowers and her kindness in imparting that knowledge have been of invaluable assistance to the members and we all most thoroughly appreciate her kind help. One of our earliest props (some one suggests it would be more polite to call them pillars) is Mrs Jenner who is present here to-day, and is probably the only 'original member ' of our party, and is happily still collecting. She had a most flourishing Branch in Ireland some years ago, which it was the fashion for all the girls in the neighbourhood to join, and, in those quiet days.

constant picnic excursions on bicycles to different places in search of flowers, added greatly to the amusement and interest of the summer. Miss M. Hall is another who for many, many years has worked hard for the Society, running not one Branch only but two. We are very pleased to see Mrs Sandwith here to-day. She did good work for the Society for several years and imbued her son with her knowledge and enthusiasm. He succeeded his mother when quite a youth as Secretary of her Branch, and wrote most illuminating reports. We wish him every success and hope that in his botanical career he will always continue to take an interest in the W.F.S. It is impossible to mention all our props, and there are many here to-day. But we express to them our deep gratitude and to all those who have helped to make the W.F.S. the success that it has been for so many years. We are very pleased," the President then continued, " to see Dr Druce among us to-day. It is a great asset to have the moral support of a great botanist, who takes such kindly and helpful interest in the well-being of what he is pleased to call ' a botanical nursery.' I think the names of our two Societies indicate the difference between them. Ours is a ' Wild Flower Society,' which anyone, young, old or ignorant, who loves wild flowers, may like to join. His is a ' Botanical Society,' which includes many learned and scientific botanists of the day, presided over by one of the most learned, and I may add, kindly field botanists in Europe, and to which some of our members hope to attain, and indeed are doing so. We are most grateful for all his interest and help. As lovers of wild flowers we are all keenly interested in their preservation, and you will all be interested in Sir Maurice Abbot-Anderson's scheme to establish ' Flora's League ' about which he may give you a short notice later. Before concluding, I should like to thank everyone personally for their past kindness and ready help. As a class, I think, flower lovers must be the kindest, most friendly and most delightful people in the world. The Society seems to have run on greased wheels, greased with loving kindness, and though there have been many imperfections, I and my daughters have been forgiven, and we have received nothing but thanks and gratitude. We are most grateful, and the W.F.S. has given us as much pleasure and interest as any of our members." Dr Druce then presented to Lady Davy Fryer's beautiful illustrated book on the British Potamogetons, a small recognition of her great services from about 40 of the members and friends whom she has helped the most in their wild flower hunting; and Lady Davy made brief, but graceful acknowledgment. We all then settled down to listen to an extraordinary interesting address which Dr Druce most kindly consented to give us. It was, most appropriately, on the plants which have been lost, and the plants which have been added to the British flora in recent years. We were all delighted to learn that, in spite of everything, less than half a dozen native plants have disappeared from these shores since the days of Queen Elizabeth. On the other hand many more than this number have been discovered or become permanently established, and we all felt very proud to hear that several of these new additions have been found and recorded by members of the Wild Flower Society. As we are yet hoping that Dr Druce may be persuaded to write us at least an epitome of his most valuable and inspiring talk (which was illustrated by actual specimens) we will not attempt to forestall him or do less than justice to his remarks. Miss Bacon then in a charming little speech touched on the great friendships which had been made through the W.F.S. and the tremendous debt of gratitude on that score alone which was owed by everybody to the Founder and members. It was invidious to mention names, she said, nevertheless, who that had ever received the wholehearted help of Lady Davy in Surrey, Mr Green at Bath, Mr Miller at Burnham, Miss Robinson in Sussex, Mrs Perry Coste in Cornwall, Mr Foggitt, who apparently owned Upper Teesdale and Ben Lawers, and the delightful coterie of friends at Ashburton, Devon, would ever forget their extraordinary kindness. Sir Maurice Abbot-Anderson then proposed a vote of thanks to the President, to Dr Druce and the organisers of the Conversazione and mentioned his desire to start a " Flora's League " for the preservation of the wild flowers and hoped that all members wishing to join would write to him at 78 Portland Place, W.1. The Rev. D. M. Heath seconded. Thus ended a most delightful and memorable afternoon, and our only regret was that all the members could not be with us.

Williams, R. O. Flora of Trinidad and Tobago. Foreword by W. G. Freeman. Vol. I., Part I., Ranales. Pp. 22, 1928; 1/-. We are very glad to see that *Castalia* is used for the White Water-lily. Vol. II., Part I., Rubiales (with E. E. Cheeseman, B.Sc.). Pp. 48, 1928; 2/-. We trust that this useful work may go on so as to give us a complete account of the vegetation of these beautiful islands. The flora is being issued from the Government Printing Office, Port of Spain.

Winchester College Natural History Report, 1924-7. Pp. 36, 1928. Edited by S. A. McDowall, who pays a pleasing tribute to his erstwhile colleague, Mr Hewett, a real native lover and one who did much to stimulate the study of plants among his students. This number contains 5 plates of Orchids. (1) *Gymnadenia conopsea* × *O. Fuchsii*. (2) *Habenaria viridis* × *O. Fuchsii*. (3) *H. viridis* × *G. conopea* = *Gymplatanthera Jacksonii* (if bigeneric hybrids are written on these lines surely it should be *Coeloglossgymnadenia* or rather *Coeloglosshabenaria Jacksonii*). (4) *Ophrys apifera* var. *alba*. (5) *Ophrys apifera*, an abnormal form with labellum and petals replaced by ordinary sepals, the normal column and rostellum standing up in the centre of six sepals. (6) *Aceras anthropophora*, rediscovered in a new station. I am inclined to think that the *Cephalanthera rubra* recorded from St Mary Bourne is an error. Is there an available specimen for identification? H. Cary Gilson and E. M. de M. Malan found, among other species, *Orchis praetermissa* on Telegraph Hill and with it the hybrid *Fuchsii* × *praetermissa*.

Woodhead, Prof. T. W., Ph.D. The Forests of Europe and Their Development in Post-Glacial Times. Empire Forestry Journal, vol. vii., n. 2, 1928. Considerable attention is given to Erdtman's work on the pollen grains found in successive horizons of the peat and a map shows the position of European deposits so investigated by means of pollen-statistics. It must be borne in mind that Aspen and Rowan pollen-grains are not preserved. Jessen records tree-pollen in the post-glacial bogs in the Faroes, said to be carried thither by wind from Norway and Scotland. The change from Boreal to the Atlantic periods, 3000-5000 B.C., is clearly indicated in Erdtman's pollen diagram of the peat of Chat Moss. There Hazel soon appeared. At this time Elm and Oak came in and Pine steadily increased. Dr Woodhead says he has identified Pine as charcoal at Woodhenge, in Wilts, which belongs to the late Bronze age or perhaps earlier.

OBITUARIES.

CHRISTY, ROBERT MILLER, F.L.S. 1861-1928. Born on May 21, 1861; died in the Middlesex Hospital, after a serious operation, on January 25, 1928. He was the son of a well-known Quaker, and was educated at the Friends' School at Bootham, York. He was an original and prominent member of the Essex Field Club, being President in 1905-7. His most important paper was that contributed to the Linnean Society, to which he was elected in 1889, on "*Primula elatior* in Britain: its Distribution, Peculiarities, Hybrids and Allies." He shows that *elatior* occupies sharply defined areas in which *vulgaris* is absent. Where the outside zone touches the *vulgaris* area, hybrids abound. Its distribution seems to be limited to the glacial clays of East Anglia. In 1922 he read a paper on "The Pollination of the British Primulas" which in the main supported the conclusion arrived at by Darwin, *i.e.*, that the pollination is normally effected by night-flying moths. In the *Journal of Ecology*, 1924, he gave an excellent account of "The Distribution of *Carpinus Betulus* in Britain," on which we had much correspondence. He saw my herbarium specimens and I was enabled to supply him with a small-leaved form from the Chilterns which he named *parvifolia*. Whether it will retain its characters if planted or sown in rich soil is a subject which we hope Mr Marsden-Jones may follow up. It is not possible to predict what may happen. The tiny one-flowered form of *Campanula glomerata*, which some gushing creatures recorded as *Gentiana acaulis* (!) when planted in my garden grew into a many-flowered plant a foot in height. Contrariwise, some micro-forms of *Stachys officinalis* have remained unchanged in the Cambridge Botanical Gardens. Regarding the small-leaved Hornbeam, he wrote to me on March 23, 1922, that he had always been puzzled by my records of the tree growing on the chalk in Berks, Bucks and Oxon. "Yesterday I saw at the Herb. Brit. Mus. your specimen from Chinnor of May 1884, having characters I have never seen before—very small and almost perfectly ovate leaves, with profusely but fairly doubly serrate edges. It seems more deserving of varietal rank than either of the many varieties given by Moss, etc." To this I replied at length and gave him additional specimens. In April 1922 he replied—"The leaves have not quite the same ovate shape as those from Chinnor, but agree in their remarkably small size. I think, therefore, that the form is fully entitled to varietal rank, and that your suggested name is in every way appropriate. I have therefore mentioned it as yours and endorse it in the Monograph I have in hand. I hope I may have a chance of seeing this form growing." In the *Journal of Botany*, 115, 1928, there is an appreciative obituary from the pen of Mr E. G. Baker, with a copious Bibliography, which shows that Miller Christy was a man of culture and of varied tastes.

COULTER, JOHN MERL. 1851-1928. Born at Ningpo, China, November 20, 1851; died, after a few days' illness, on December 23, 1928. He was educated at Hanover College, Indiana, and worked for two years in the Rocky Mountains as botanist to the U.S. Geological Survey. He was the editor for 50 years of the American Botanical Gazette, and was the head for many years of the Botanical Department of the University of Chicago. We have many of his plants at Oxford. Later on he published in 1884 a "Manual of the Botany of the Rocky Mountain Region," and, with his brother, a revision of the "North American Umbelliferae," etc. He became President of the American Association for the Advancement of Science and of the Botanical Society of America. He was a foreign member of the Linnean Society and hon. member of the Botanical Society of Edinburgh. An excellent memoir by Dr A. B. Rendle appears in *Journ. Bot.* 82, 1929.

CUMMING, LINNAEUS. Born in 1843; died at Kilsby, Northamptonshire, April 1927. Educated at Perse College, Cambridge, he entered Trinity as a scholar, and in 1865 was placed seventh in the list of wranglers. In 1869 he joined the staff of Cheltenham College under Jex Blake, following him as Mathematical and Science Master to Rugby in 1875. There his vigorous and cheerful manner made him very popular and he did much to interest the boys in Natural Science. He was a mainspring in the School Natural History Society and was brimful of enthusiasm. It is said that owing to an unsuccessful chemical experiment—and there are none that are so whole-heartedly popular, at least among the pupils, as those that go wrong—he earned for himself the soubriquet of "Puff." There he wrote two text works on electricity, for he was an all round worker. Twice he made journeys to see Solar Eclipses, and geology and chemistry had in him an enthusiastic devotee. With his friend, the Rev. O. Wait, he worked the flora of Ben Lawers, and from that place he sent me a sedge, *Carex helvola*, new to that county. It aroused some discussion, but the Ffarrer G. Kükenthal corroborated my identification. Hitherto one of its assumed parents, *C. Lachenalii*, had not been found on that mountain. In order to see it *in situ*, I went up and spent several days in quest and failed to find *Lachenalii* but found *helvola* in some plenty and another hybrid of *canescens* in which *stellulata* was the other parent. It is *C. tetrastachya*. His two small children were with us, and to my horror I saw them racing down a grassy slope which ended in a 200 feet drop. I yelled to them to go back for a plant they had missed, which they did, and then after some anxious minutes got them back to a place of comparative safety. On another occasion, after searching the eastern shore of Loch Tay, on our return in the boat a violent squall got up and we were nearly swamped. It took us a full hour to get back to the pier, Cumming and Wait pulling in a wonderful way, but to the children it was a splendid joke. Alas his boy lost his life in the Great War, and his daughter, whom he named Linnaea, who came to Trinity, Oxford, died. She had done so much to help him when as an octogenarian he practically became blind during his last years. But he never lost his cheeriness, and his noisy, boisterous laugh, which might be heard over half a county as he recounted some of his pupils' or his own exploits, was as ever in evidence. He collected plants around Rugby with assiduity and these he has left to the School Herbarium. Rubi especially interested him, and with Rogers and Riddelsdell he made considerable gatherings. These he left to me and also the plants he found in Norway and at La Lauteret—a place he was especially devoted to. Of Browning he was a great admirer, and although "with wisdom at one entrance quite shut out," his tenacious memory rarely failed him when he quoted some favourite extract. And he kept up his gardening and his Orchids, of which he had fine specimens, to the last. His long life of almost unbroken health was bestrewn with numerous friendships with a wide range of people, the survivors of whom sadly miss the absence of so amiable and so inspiring a personality. An excellent photograph accompanies the memoir in the School Magazine which the headmaster was so kind as to send me.

ENANDER, Rev. Dr SVEN JOHAN. 1847-1928. Born at Torsas, Sweden, December 29, 1947; died at Victoria, B.C., December 16, 1928. He was educated at Uppsala and took orders in 1883 becoming Pastor of Lillhärdal. His chief work was "Studier öfver i Linné's Herbarium," which included an account of a few specimens of Celsuis. In 1904-10 he issued three fascicles of "Salices Scandinaviae Exsiccatae." This had critical notes and descriptions and is invaluable to those studying the alpine willows. He also critically examined most of our British hybrids. In many cases the names arrived at by Linton were modified (see *Camb. Fl.* ii., 36-37, where the editor says that most of Enander's suggestions have been adopted). Enander, when well over eighty years of age, completed a lengthy voyage and journey through America and Canada, including an excursion into the most difficult country in the Gaspe peninsula in the State of Quebec. His contemplated journey was to Alaska as far as Behring's Straits and Kamchatka—southwards along the Rockies to Los Angelos—across the Pacific to Japan and to Pekin—to Calcutta, Sikkim, Baghdad, Jericho; Xmas at Jerusalem; Bethlehem, Constantinople and to fly back to Sweden, but illness overtook him and he died in British Columbia.

FRANKLEN, Sir THOMAS MANSEL. 1840-1928. A son of Richard Franklen of Clemenston, a county High Sheriff of Glamorgan, his mother was a sister of C. R. M. Talbot of Margam, father of the House of Commons and Lord Lieutenant of Glamorgan. Thomas was educated at Harrow and Oxford, being called to the Bar in 1865. In 1878 he became Clerk of the Peace of the county, and died on the day he had completed 50 years of service. In 1889 he became Clerk of the County Council and was Knighted in 1921. He was a descendant of Fox Talbot, of Laycock Abbey, who invented the Talbot-type process of Photography. Not long ago, while staying at Westonbirt, where Miss Talbot was a fellow guest, she showed me a photograph of Queen's College, Oxford, taken by her uncle in the early forties. He himself was a proficient photographer. He knew British Ferns well and had a fine collection of them growing.

On more than one occasion I have enjoyed his and Lady Mansel Franklen's kindly hospitality, the last occasion being on one of the B.E.C. excursions to the Gower Peninsula. Those of us who were present will not soon forget the afternoon at St Hilary's. Then his health was breaking, but few would have realised that he was in his 86th year. He married the only daughter of the late Thomas Allen, a barrister-at-law, of Freetsone, Pembrokeshire.

GREY, LADY, OF FALLODON. The Editor, Dr Druce, writing to "The Times," says:—"My first meeting with Lady Grey was in the beautiful park at Biddesden, shortly after a charming poem from her pen on the Hedge Parsley had appeared, and it was when its beauty was at its zenith that my first visit to Wilsford—happy prelude to a long succession—was made. Guided with her gracious companionship, we passed from formal garden into informal pleasaunces, which melted imperceptibly into the lush meadows by the clear trout stream, meadows that were thick with marsh marigolds, of meadow avens, yellow iris, and blue columbines; and the stream was thick with floating water-buttercups or fringed with meadow-rue, water drop-wort, and meadow-sweet. Then one began to realise that my guide knew and loved all the flowers that blow, and, as a bullfinch came and settled on her shoulder and piped his love-song into her ear, that her affection for all the sentient life around her was an innate gift which culture only had made more selective and perfect. What memories of her thoughtful hospitality arise when one recalls, but not with undimmed eyes, the caravan journeys over the downs, fragrant with wild thyme, to Stonehenge, or of wanderings amid Arthurian-named places such as Amesbury, where the sacred altar blossomed white with may, or the never-to-be-forgotten evenings in the Great Yews, in the cathedral-like aisles of that romantic wood, in open spaces blue with bugles, and in the denser foliage, where the ground was bare of vegetation but carpeted with pale brown dead and dry yew-leaves. And there are vivid memories of wanderings in the hills above Glen and among the eye-bright studded turf, or of visits to Stuartian Traquair or to where distant Tweed is heard to rave, or to Dryburgh, of which the gift to the nation was whole-heartedly supported, if it were not initiated, by her kindly heart. Perhaps, after all, it was the evenings at Wilsford or Glen, and in after times at Fallodon, which were most enjoyable. Now and then she would read to us in her delightfully trained and soft, low voice some dainty ode, while her boys—each such a varied type—would sing a sailor's song or make gentle music. At Fallodon one would stroll into the great aviary, where she would be welcomed by her feathered friends. In all these scenes she would be a charming figure, from her rare beauty, her gentle bearing—like her brother, patrician to her finger-tips, yet never, even among Kings, losing the simple, human touch."

HARFORD, BEATRICE, relict of William (Billy) Harford, of Petty France, who was accidentally killed while hunting with his brother-in-law, the Duke of Beaufort's, Badminton Pack. He was a curiously symbiotic individual and probably was the only hunter who was a Benthamite. Not rarely did he bring home to his wife some spoil from the chase but it was not of a vulpine character. He thus found *Euphorbia Cyparissias.* His wife, one of the sweetest women who ever breathed, was herself a rider to hounds with her sister, the Hon. Mrs Tony Fitzwilliam. Fair and daring horsewomen, they were the daughters of Dr Hamilton Kinglake of the Somersetshire Wilton, and nieces of William Alexander Kinglake, the author of "Eothen" and of the epical "Invasion of the Crimea," who once dismounted Pegasus and wrote of his niece:

> There was a young lady of Wilton
> Who read all the poems of Milton,
> And when she 'ad done
> She said "What good fun,"
> This fair young lady of Wilton.

Early in life arthritis lamed her hands, and it was with sad but admiring eyes one watched her painting her flowers. She was always ready to help and comfort others. Alas it is sad to see the link broken with Petty France by her death this year. One has her letter, written with what difficulty who can say, in answer to my note on the loss of my dear friend, her husband. Who could have predicted that the strong Centaur should have predeceased the fragile and maimed invalid, who had inherited the dainty literary taste of the author of "Eothen," and whose sufferings only brought out a well-spring of kindness and sweetness for others.

HENRIQUES, DR JULIO AUGUSTO. 1838-1928. Formerly Professor of Botany in the University of Coimbra and Director of its Botanic Garden he edited the "Boletin do Sociedade Broteriana," which he founded in 1883—a journal chiefly devoted to the Taxonomic botany of Portugal and its colonies.

LAMBOURNE, AMELIUS RICHARD MARK LOCKWOOD, BARON. 1847-1928. The first Baron was born on August 17, 1847, and died at Bishops Hall, near Romford, November 27, 1928. He was President of the Royal Horticultural Society, Lord Lieutenant of Essex, and Provincial Grand Master of Essex, 1902-28. Educated at Eton, where his chief friends were Lord Rosebery and Lord W. Beresford, he entered the Coldstream Guards in 1886, his father saying, "I gave him plenty of good advice and d——d little money." Colonel Mark Lockwood was one of the most popular members of the House of Commons where the red carnation and the well-groomed figure of "Uncle Mark" were always a welcome sight. He had an intense hatred of cruelty of animals, yet was blooded at the age of three and rode regularly to the hounds under Parson Arkwright at the early age of eight. He was a keen horticulturist, and at his home had a large collection of flowering shrubs and a great range of glass-houses. Honoured with the personal friendship of their Majesties and Princess Mary, it was his privilege to conduct them round the Exhibition at Vincent Square, which he did with charming courtesy. At his home he had a fine library in which County Histories were a special feature—as was the Majolica among his china. At his lamented death the peerage became extinct.

LINDMAN, CARL AXEL MAGNUS. 1856-1928. Born on April 6, 1856; died at Stockholm, June 21, 1928. He was educated at Uppsala where he took his degree in 1884. his doctorate in 1886, and became lector in the Classical High School of Stockholm in 1887. From 1896-1904 he was tutor to the Crown Prince of Sweden, during which time, as he told me, he paid several visits to the German Courts. In 1905 he became Director of the Botanical Department of the Riks Museets. Prior to this he had travelled widely in many countries, including Africa. W. Europe (see his paper on the Vegetation of Cadiz in 1886). and Paraguay, bringing many fine specimens of vegetation which are in the Botanical Museum at Stockholm. He was one of the members of the International Phytogeographical Excursion which visited Britain in 1911, and from our five or six weeks' companionship grew up a warm friendship. He was one of the most cultured men I have ever met. He could speak eight and write ten different languages. He was a good musician, being the leader of the choir in his church in Stockholm, and an artist of considerable power. Although in later years he restricted himself to botanical drawing, in his earlier days he was an acute and a happy caricaturist. As an instance of his acquaintance with music and language, one evening, when we were at Clifden in Galway and were preparing our plants for the press, I asked him to sing a Swedish folk-song. This he did and at a tangent was asked to sing "Robin Adair," "Partant pour la Syrie," the "Lorelei" and "Santa Lucia." This he did in their own language and without musical notes or words. The accurate drawings in his "Svensk Fanerogamflora" of 1918 are from his pencil, and his botanical knowledge is well brought out in that capital work, a second edition of which was published in 1926. Just before his death he sent me an abbreviated edition prepared for use as a School Flora. His favourite groups were *Poa* and *Crataegus*. Of the latter he included six species in his Flora, and he showed me four of them in the environs of Stockholm. We could only find *monogyna* and *oxycanthoides* in Britain. The statement regarding *Polygonum calcatum* made in *Journ. Bot.*, 301, 1928, does not represent the facts. We saw no *Polygonum calcatum* Lindm. on our journey. It was found by Dr Moss and he sent it to Dr Lindman in Stockholm, who replied that the specimens were certainly *calcatum*. Later on, in 1911, when Lindman was my guest at Oxford, he recognised a specimen I had gathered in Bucks as a hybrid of that species—my ×*P. Lindmanii*. So too with *Poa irrigata*. See my paper in *Rep. B.E.C.*, 181, 1912. As *Poa pratensis*, f. *umbrosa*, *irrigata* is mentioned in my *Flora of Berks*, 580, 1897, and as *P. humilis* in *Ann. Scot. Nat. Hist.*, 37, 128, 1895. Still earlier, in 1799, it was recorded as *P. humilis* from Anglesey, by the Rev. H. Davies. But *P. humilis* Ehrh. is a nomen nudum. As I said in my article in the *Report* on our journey in 1911 Lindman described to me his *irrigata* but we did not note it on our journey through the British Isles. On his recent visit to me he examined my collection when he unhesitatingly identified my Lawers and Cnochan specimens as his *irrigata*. Long previously my Lawers [2512] specimens were referred to "*arctica* f. *scotica*" by H. Fisher. His visit to me was a most agreeable one, and he was pleased to see the forms of *Polygonum* and *Crataegus* in which he was specially interested. He issued an account of a Linnean Herbarium in Stockholm, and of *Orchis maculata*, sens. lat., with figures, in 1897. Shortly afterwards he had a very severe illness, necessitating an internal operation. On my visiting him in Stockholm in September 1925 I found him much changed, and looking very fragile. However he went out with us on a charming expedition to Sallsjobaden and pointed out the new *Geranium deprehensum* and *Arctium tomentosum*. The latter ought to be found in Britain. We spent a delightful evening with him and his kindly wife at his home. He introduced me to his successor, Prof. Gunner Saunersson, who showed me the English specimen of *Cerastium Cerastoides*, and Dr Dahlstedt. Our parting was pathetic for he was convinced that his time on earth was short. In his letter of February 1927 he says:—"Although better, I will be well, 'never no more'." But he had an immeasurable consolation for, as a most devout Christian, he had supreme confidence, and if ever there was one who deserved the Crown it was surely he who had lived so honourable, unselfish, useful and devout a life. Alas, my last letter, or rather its enclosure of plants, came back last July with a most touching and appreciative letter from his goodly helpmate, to whom we offer our profound sympathy. There is a very eulogistic notice and portrait in Adolf Fredriks' "Forsamhings Kyrkoblad" by Oscar Manström.

I add a few notes from Prof. Lindman's correspondence:—

"May 18, 1912.—I wish to thank you for your lovely work [The Floristic Results of the International Phytogeographical Excursion in 1911]. I have carefully read everything and so I have made once more with you, my dear friend, the I.P.E. [Excursion] you know. I have been very glad to know in a letter from Moss that you now no longer keep your bed, but I find it very deplorable that you are not quite recovered."

"November 7, 1912.—I had a delightful stay with you last summer. How shall I be able to thank you for the very nice days at Yardley Lodge, for the pleasant excursions and for the great pleasure of the Clova day. [This was at the British Association Meeting at Dundee at which he was a guest. He went with me to have tea at Cortachy Castle with the Countess of Airlie.] I have got to-day some copies of my papers on *Polygonum aviculare*. They have not been delivered earlier to anybody because the whole set of 34 different papers had first to be given to Prof. Th. M. Fries in Uppsala on October 28, his 80th birthday. You will find in the paper two illustrations from our Oxford rushes [expeditions]. When you took me out on August 22 we collected the first one in a cornfield, where the *aviculare* was very high and dense, beside good *heterophyllum*, another, but this contained two different forms. One of these, plate 25, fig. 2, I call *heterophyllum*, but on account of the fruit, plate 23, 7, there must be something of *P. equale* in it (thus *equale* × *heterophyllum* forma ex nullis). The same afternoon we collected a prostrate plant on a pasture (the stopping place where we turned back). I called it *equale* but afterwards I see it is another intermediate form, plate 23, fig. 9. The more I collect the more I get hybrids. I should be glad to see your new specimens of British Polygonums. Are you in correspondence with Lady Airlie? If so do you think it would be correct to assure her how much I esteemed her kindness and hospitality."

"October 3, 1913.—I suppose the old world, Orbis Vetus, has the pleasure to have you home again with your vasculum? It was very kind of you to send the pretty postcards from the West Indies. Can you lend me all your specimens of (1) *Sagina Saginoides*, and (2) your *Sagina scotica*—all you collected on Ben Lawers. I wish to know your new species better and to compare your samples with my own. As I now think, your *scotica* is a species, not more and not less. . . . I also wish to see if the Ben Lawers plant exists here in Lapland.

"December 12, 1914.—Your *scotica* (as the *Camb. Flora* pub. it) from Scotland is not *S. Saginoides*. I think I have explained this view in my paper in *Bot. Not.*, 267, 1913, where it says, 'There cannot be any uncertainty as to the question which of these two (4962 and 4963 b) in Rchb.'s *Ic. Fl. Germ. et Helv*. is the true "Saginoides" (L.). This species was quite plainly distinguished and perfectly known before Reichenbach published his *Icones*, vol. 5. O. Swartz has described and figured it . . . G. Wahlenberg in his Fl. Lapp. . . . The plate in *Eng. Bot.*, vol. 30, 1810 . . . This figure is quoted by Presl . . . We also find exactly the same plant in *Flora Dan.* v., 9, t. 1577, 1818, in *Svensk Botanik*, pl. 765. and in Pollini's *Flora Veron.*, ii., 1822, t. 1, f. 2 (just the figure quoted by Reichenbach (*Ic.* v., pt. ccii., fig. 4963 b) to his *Spergella macrocarpa*. . . ' You find that Moss says (*Journ. Bot.*, March, p. 59, 1914) about Rchb.'s two forms 'I do not detect the slightest confusion here,' but this is a mistake, for Rchb.'s '*S. Saginoides*' is not the same as Swartz, 1789, Wahlenberg's, 1812, nor that of *Eng. Bot.*, 1810, *Flora Dan.*, 1818, *Flora Veronensis*, 1822, which all are older works than Rchb.'s *Ic. Fl. Germ.*, vol. v., 1841. Reichenbach has consequently caused a confusion, and this is no better if Moss quotes Beck (See Moss' paper, p. 59), for this author is a trespasser like Rchb. in this regard. I must add that we have the true (the bigger) *S. sagin.* plentiful in Scandinavia, whilst the *scotica* is not exactly rare, but about 100 times less frequent! This is proved by all our large herbaria. You may observe that, in view of so numerous herbarium specimens, Dr Moss has established a bad principle in applying to so bad an Icon as Rchb.'s 4962. I have said in my paper, p. 278, 'This must be *S. media*. . . . It is by no means so well drawn, except the details. . .' Do you really think it is fair to put a bad illustration in the first place, preferring it to all known and acknowledged museum specimens?"

During the war our correspondence waned and, as Dr Lindman belonged to the court party, his sympathies were on the other side, as may be gathered by his letter of July 1919. Other letters of mine to him had gone astray.

"I am glad you live and work. I do so too. although the five years of the war have caused much suffering. I and many older men and small children have paid for your war with broken health. However, I have succeeded in finishing my Fanerogamflora and am sending you the product, but I am ashamed the book is not bound. The British Navy has not left us much comfort and not so much leather as to bind a small flora. Thank you very much, dear Mr Druce, for so much news. Your Hon. Degree of LL.D. delighted me. Next August and September I shall be travelling in S.W. Norway and the Danish Isles to hunt *Crataegus* forms. I hope to have a final settlement . . . which will include six additional to those given in the Flora. Your *Poa* is *irrigata*."

"December 20, 1921.—You asked me in an earlier letter whether I meant that you had the *Cerastium subtetrandrum* (from the Northern Islands I believe). [It was Zetland.] No, I only saw *C. tetrandrum*. The first (*subt.*) has a longer whitish top on the sepals, but *tetr.* a short one. *Subtr.* has much smaller seeds, 0.5 mm.; *tetr.*, on the contrary, 0.7 (-1) mm. To fancy that more than ten years are gone since our glad and merry I.P.E.! A very sunny time, the first day in a little boat on a Broad in Norfolk, a slight rain (I had the honour to be placed together with you), and one of the last days a heavy one (at Ardrachan ?); all the other days hot and bright. I never forget that journey. Thank you so much for your information in the last letter, that Martyn's '*Quercus sessilis*' is a variety (and that '*Qu. sessiliflora* Martyn' does not exist [*Q. Robur*, var. *sessilis*]. In my *Svensk Fanerogamflora* this combination is taken from an Exchange list, issued in Lund, 1917). There are a good many mistakes in my book (of 1918). I hope to send you some day a little list with these 'errata' (some of the lapsus calamis, some lapsus mentis). I hope you are well, my good friend! Please don't forget me."

LINTON, The Rev. E. F., M.A. 1848-1928. Born at Diddington Vicarage, Huntingdon, on March 16, 1848; died at Southbourne, Hampshire, January 9, 1928. He was educated at Repton and at University College, Oxford, when he took a third class in Classical Mods., and graduated in 1871. He held a curacy for five years at St Paul's, Preston, then he was Rector for three years at St George's-in-the-Fields. In 1878 he went to Sprowston in Norfolk, where he remained for ten years, and there he became active in local botany. He cultivated many native species in his garden, and found time to make many expeditions to Scotland and Ireland, which had good results. In 1888 he left Norfolk and took a house in Bournemouth, where I first met him. (Afterwards we were fellow-guests of the Misses Palmer at Odiham.) At Bournemouth he cultivated willows and produced some artificial hybrids. He was also a keen student of the Hieracia. There, too, he worked with his neighbour, the Rev. W. Moyle Rogers, at the Rubi and, eventually, with the co-operation of his brother, the Rev. W. R. Linton, an interesting set of 134 British Rubi was issued, 1892-6. His brother, W. R. Linton, the author of "British Hieracia" (pp. 96, 1905, 4/-), co-operated with him in issuing a set of 112 Willows. He was to have written the account of the Salices in the "Cambridge Flora," but differences of opinion arose between him and the compiler. Eventually the MS. was returned, and he published it as a supplement to the "Journal of Botany" in 1913. His choice of *Salix Andersoniana* instead of *nigricans* has been justified. With his brother, a set of 160 British Hieracia was issued, and these have a great value as they are cited by Zahn in his recent Monograph, often necessarily under another name. During these years he was one of our most active field botanists, and the Scottish hills were repeatedly worked. He was a contributor of plants to this Exchange Club. On one occasion when our Secretary, Mr C. Bailey, was unable to obtain a Distributor and had to do that onerous work himself, Mr Linton was among the two or three who blamed him for this. Indeed he was one of the prime movers in founding the Watson Exchange Club. This necessarily led to some feeling of coldness—I won't say resentment (Bailey was not that type), and it was one of the factors which led to Mr Bailey's resignation. In 1901 he went as Rector to Edmondsham in Dorset, but in the previous year he had published the "Flora of Bournemouth"—the foundations of which were naturally Townsend's "Flora of Hampshire" and Mansel-Pleydell's "Flora of Dorset," both works being freely requisitioned. It contained a description of the sub-species, *Orchis ericetorum*. I am afraid he resented my showing that this was synonymous with *O. maculata praecox* of Webster. In fact it is synonymous with *Orchis maculata* L. He resented too a remark I made connected with Painter's *Orchis incarnata* sent to the Club (*Rep. B.E.C.*, 310,1907) from Booth Bog. Mr Linton's comment was, "Right. Preserved so well that the marking of the lip is discernible." Marshall says "No; [it is] *O. latifolia* L. *O. incarnata* has the stem-leaves hooded at the lips, and a conical spur; in this plant the leaf-lips are quite flat, and the spur more elongate-oblong." In *Rep. B.E.C.*, 419, 1909, discussing a reputed hybrid found by him in Dorset as *incarnata* × *ericetorum*, I said it must be borne in mind that Mr Linton's idea of *incarnata* apparently differs from that of the Rev. E. S. Marshall as was evident. As a matter of fact, Painter's *Orchis* was neither the one nor the other: it was *praetermissa*. Linton had some of the merits and some of the defects of the squarson. It was unkindly said that he might have been a botanical Pompey Bedell but those who knew him best realised that beneath the surface a kindly heart was beating. He did not relish (not many do) correcting an error, notably when he refused to acknowledge Mansel-Pleydell's complaint that Linton had criticised him for not including *Ulex Gallii* in the Dorset Flora, whereas, on p. 91, it is said to be common. In later days he extended his study to the Fungi, and was much interested in geology. In 1922 he had presented to him by Sir Daniel Morris, representing the Bournemouth Natural Science Society, their Gold Medal which his activities in their midst amply deserved. His additions to the British Flora were numerous and important, especially in the critical forms of Rubus, Hieracium and Salix. They include *Rubus lactus* (nomen abortivum), afterwards named *R. Lintoni*, *R. Rogersii*, *Hieracium Lintoni* and many hybrid Salices. His hybrid, *Erica Stuarti* (*Ann. Scot. Nat. Hist.*, 176, 1902), seems to be only a teratological modification, and his *Carex trinervis* is not the plant of Degland, the *C. cerina* of Dumort., which as yet has not been found in Britain. His *Thymus Loevyanus* is an incorrect identification as that is Central or Eastern European, also his hybrid, *Bromus commutatus* × *Lolium perenne*, which is *Lolium perenne*, var. *sphaerostachyum*. But these slips are quite outweighed by his numerous and important discoveries. He was an early observer of the critical forms of *Alchemilla* (See *Journ. Bot.*, 132, 1900 and *Ann. Scot. Nat. Hist.*, 122, 1906) and he had the critical knowledge to show that Syme's *Carex frigida* was wrongly named. He called it *C. Sadleri* after the Edinburgh botanist who found it. By some botanists this has been thought to be *C. binervis*, var. *alpina* Drejer, but it seems to have distinctive characters and it is placed in the List as *C. Sadleri* Linton. If sub-species had been allowable it would class as one. His memoir of J. Mansel-Pleydell (*Journ. Bot.*, 260, 1902) and of Rev. W. R. Linton (*Journ. Bot.*, 65, 1908) were important testimonies to their botanical labours. His new species of the *Hieracium* include *dentifex*, *Marshalli*, *customon*, *clovense*, *candelabrae*, *Pictorum*, *petrocharis*, etc. Some years ago he had an attack of phlebitis and from that onwards he never regained his bodily, and lost much of his mental, vigour. His life's labours at British Field Botany were of high importance, and for many years he stood among the first half-dozen masters of the craft which included J. G. Baker, W. R. Linton, E. S. Marshall, J. Groves and F. J. Hanbury. His British plants were given to the British Museum and his foreign ones to Cambridge University. There is an excellent memoir of him with portrait and bibliography (J. Ardagh) by F. J. Hanbury in *Journ. Bot.*, 81, 1928.

MATZUMURA, Prof. JANZO. 1853-1928. The eminent Professor of Botany at the Imperial University of Tokyo died on March 4. For nearly 30 years he was director of the Botanic Gardens, Koishikawa.

ROBINSON, E. KAY. 1855-1928. Born at Naini Tal, December 12, 1855; died, after a long illness, at Hampton Wick, 1928. Educated at Cheltenham, he joined the staff of the "Globe" as a journalist, and later became Editor of the "Sporting Times." He then went to India but in 1895 returned to the "Globe" in London, in which paper he introduced a popular feature "By the Way." From Norfolk he wrote "To-day with Nature" in 1901, and "The Country Day by Day" in 1905. In the "Daily Mail" he brought in the "Country Day by Day" feature, and in 1903 he and Alfred Harmsworth founded "The Countryside." Although not a critical botanist, he had a great love for flowers, and had the faculty of inspiring that love in the minds of many people, to whom he was almost an inspired leader. Some people would jibe even at the insertion of the adverb.

SHOOLBRED, WILLIAM ANDREW, 1852-1928. Born at Wolverhampton, March 11, 1852, where he was educated at the Grammar School, he studied Medicine at Edinburgh and London Universities, and at St Bartholomew's Hospital, where he took his M.R.C.S. Shortly afterwards he became assistant to Dr White of Chepstow, to whose practice he succeeded, taking up his residence at St Anne's where he passed away. There he had a delightful garden close to the Castle Dell in which were a large Mulberry tree and a curious Gingko, besides many a trophy of the chase. He became an intimate friend of the Rev. E. S. Marshall and travelled and collaborated with him in about twenty expeditions to Scotland and Ireland in which interesting and valuable notes were published in the "Journal of Botany." He was an old and valued member of the B.E.C., which he joined in 1891, and to which he contributed many interesting and well-prepared specimens. In 1902 he was elected F.L.S. and in 1920 he published his "Flora of Chepstow," dedicated to Mr and Mrs Marshall, which was reviewed in *Rep. B.E.C.*, 84, 1920, in the favourable terms it deserved. In his private life he was a devoted churchman, and was most conscientious in the discharge of his duties. He was greatly respected in Chepstow not only for his medical knowledge (he was honorary surgeon to the Chepstow and District Hospital) but also for his benevolent nature. None of his patients were sent away however poor they might be. For long services with the Red Cross he was presented with a silver salver. The Rev. E. S. Marshall named a *Hieracium--Shoolbredii* after him in *Journ. Bot.*, 121. 1913, which they had found near Inchnadamph in West Sutherland on a hill overlooking Gillaroo Loch, and near the Traligill river, and the Allt na-Glaice-More, also in East Inverness on Creag Dubh, Glen Ericht: Coire Chuirn and Allt Beal an Sporam, half-way between Dalwhinnie and Dalnaspidal, and in Mid Perth on the hillside, Sgairneach Mor, facing and west of the Sow of Athol. His large and valuable Herbarium was bequeathed to the National Museum of Wales. He was much interested in the preservation of our native species and as long ago as 1904 he was taking up the question, for on that date he wrote to me, "I have already told you that the Ferns, Orchids, and Primroses, and also the wild Snowdrops are rapidly vanishing from this neighbourhood. Unless something is done soon to prevent this wholesale uprooting, several interesting species, which were once common, will shortly be as extinct as the Dodo. Mrs Price of Penmoel, who takes a great interest in the subject, showed me a number of Nature Notes a day or two ago in which a paragraph appeared asking for information on the subject to be sent to you. I am glad to say that Archdeacon Bruce is protecting (the recently discovered) *Salvia pratensis*."

SMITH, WILLIAM GARDNER. 1866-1928. Born at Dundee, March 20, 1866; died at Edinburgh, December 8, 1928. He graduated at St Andrews, and took his degree of Ph.D. from Munich. His brother, Robert, was a pupil of Flahault at Montpellier, and on his return published the "Geographical Distribution of Vegetation in Scotland: I. Edinburgh, II. Perthshire." On his early death in 1898 this line of work was continued by William, who was then Lecturer in Botany in the Department of Biology in the Yorkshire College, Leeds, where C. E. Moss and

W. M. Rankin were his pupils. The former was his collaborator in the "Geographical Distribution of Vegetation in Leeds and Halifax District," and the latter in the "Geographical Distribution in Harrogate and Skipton District." The forerunner of the Ecological Society was founded at Smith's residence in Leeds in 1904. and was called the Central Committee for the Survey and Study of British Vegetation, for which Smith acted as Secretary throughout. On its merging into the Ecological Society he was made the first honorary member. In 1908 he went to Edinburgh and was appointed Chief of the Edinburgh and East of Scotland College of Agriculture, and was made advisory officer to the Board of Agriculture in Scotland in 1927. He joined our Society in 1912. On the I.P.E. visit in 1911 he did a great deal of work in arranging the preliminary details, and we had a very lengthy and helpful correspondence over the details of the Scottish route. In a letter he wrote to me he says:—"I have just returned from the North of England where, among other things, we started the new Ecological Society. It is appalling the multiplication of Societies and one would welcome any combine. But just as the systematist finds the B.E.C. better suited for his purposes, so with Ecology we have been forced to get our needs satisfied in our own way. He was one of the examiners of the Pharmaceutical Society in Edinburgh where he was much respected. He gave the Inaugural Sessional Address to that Society in 1921 on "Botany in the Twentieth Century." He was a delightful companion, and one always found him ready to help and not to obstruct in his criticisms. His comparatively early death is a great loss to the practical side of Ecology.

Thellung, Albert. 1881-1928. By the tragically sudden death of Albert Thellung at Zurich on June 26 this Society has suffered a loss which is well nigh irreparable. He had been our referee for adventive species for many years, and the time he took, and the patience he exhibited, in identifying the sometimes too scandalously scrappy specimens which members will select, was enormous. One feels that ours were among the last straws that broke him, for there can be little doubt that his brain had been long overworked. The preparation, so complete, scholarly and meticulous, of the Umbelliferae for Hegi's "Illustrierte Flora von Mittelenropa," he had led me to believe, had been very exhausting and had tried him much. He leaves a devoted wife and a small boy, whose education should not be forgotten by those who have benefitted by his father's industry. The Habilitationschrift for his Doctorate in the University of Zurich was an important work—"La Flore Adventice de Montpellier," which he prepared during his residence there in 1905 and 1906. The completed volume is dated 1912 and was printed in the *Mémoire de la Société Nationale des Sciences Nat. et Mathém. de Cherbourg*, tome xxxviii., 1911-1912. It is a complete list without descriptions, of the plants found growing wild at Montpellier and the adjacent Port Juvenal, many of them wool aliens. A list of previous workers is given. The species have a rich synonymy. They number 526, of which 416 are Mediterranean. *Cf.* our Tweedside Flora which has 351 species of which only 113 are British.

Geographical Source.	Montpellier.	Tweedside.
Mediterranean, ...	416	113
Europe, E. & Asia, W.,	17	48 (E. & C. Eur.)
Asia, C., N. & E., ...	2	14
Africa, S., ...	6	43
Australasia, ...	5	51
America, N., ...	4	23
America, Tropical, ...	11	8
America, S., ...	49	43
Unknown, ...	16	5
	526	348

The Flora is a classical work. In collaboration with his Director, Prof. Schinz, the eminent botanist and nomenclatorist, a large number of papers were issued. One, published as a combined letter on Töt-geborenen names on December 10, 1907, in *Viertelj. Naturf. Gesell. Zurich*, was Beitr. Kennt. Schweizflora, n. 5, 1915, in which *Dryopteris* vice *Lastrea*, *Helleborine* vice *Epipactis*, *Statice* L. em. Mill. vice *Armeria*, and *Cirsium* vice *Cnicus* were definitely accepted. For *Eupteris* vice *Pteridium* see Mittel Beitr. Nom. Schweiz. vii., 414. For *Sparganium longifolium* vice *S. affine*, *Polygonum mite* vice *P. dubium*, *Arabis caucasica* vice *A. albida* see Beitr. Kennt. Schweiz., 457, 1923. For *Dryopteris* vice *Thelypteris*, *Agrostis capillaris* vice *A. tenuis*, *Puccinellia* vice *Atropis*, *Nymphozanthus* vice *Nuphar*, *Erucastrum gallicum* vice *E. Pollichii*, *Circaea canadensis* vice *C. intermedia*, *Veronica Tournefortii* vice *Buxbaumii*, *Leontodon nudicaulis* vice *L. hirtum*, see Beitr. Kennt. Schweiz., 258, 1921. See also Weitere Beitr. zur Nomenklatur der Schweizflora (xi.) in *Viert. der Nat. Gesell. Zurich*, 72, 205, 1927. Hybrids from the Bernese Oberland was published in *Ber. Schweiz. Bot. Gesell.*, xxxvi., 1927. His valuable work on the Umbelliferae in Hegi's "Illustrierte Flora von Mitteleuropa" was reviewed in *Rep. B.E.C.*, 82, 1926. It was then said :—" Anyone who is acquainted with Dr Thellung's meticulous care and intimate knowledge of the plants he treats of would expect that a first-class piece of work would be reproduced and one at once can say that the results are eminently satisfactory." His earlier specialised works included his monograph on the *Amarantus* which appeared in Ascherson and Graebner's "Synopsis der Mittel-Europaischen Flora," pp. 225-356, 1914, which was a masterly treatment of a very difficult subject. His contributions on the genus *Lepidium* are equally valuable. For many years he had been one of my most valuable and frequent correspondents. I made his personal acquaintance at Zurich and for very many years he has been most kind and helpful. Miss I. M. Hayward and myself were greatly indebted to him for his help in the " Flora of Tweedside," and we showed in some way our appreciation by dedicating the book to him " In recognition of his kindly help, and with homage for his laborious work in connection with the Adventive Flora of Europe." He complained to me frequently of being overtired: indeed in 1924 he had a nervous breakdown, but it came as a bolt from the blue when one heard of his sudden death at the early age of 47. It is not making an undue claim for his name to be put among the Martyrs of Science. His great Herbarium it was hoped might have come to Britain, but at present the suggestion has not matured. As I have said, his loss to our Society is well nigh irreparable, and to myself it is a desolating blow.

A few of his letters are here added to show his methods:—

" Zurich, November 3, 1922.—J'ai bien reçu le dernier ' Report ' de notre Société et je m'empresse de vous en remercier et de vous féliciter bien cordialement de votre grand et utile travail, surtout de la volumineuse ' Flora Zetlandica.' J'espère pouvoir bientôt parcourir le ' Report ' d'une manière plus complète et de revenir alors, par correspondence, sur l'un ou l'autre détail. J'ai remarqué avec plaisir que vous avez analysé d'une manière très détaillée notre dernière note sur le nomenclature de la Flore Suisse. Je viens de rédiger une courte note, qui paraîtra dans Le Monde des Plantes, sur mes observations floristiques faites à Zermatt l'été dernier. Bien cordialement, Amitiés de M. Schroeter et compliments de Mme. Thellung."

" Wengen, August 3, 1924.—Je vous remercie bien de votre tiré à part sur le *Rumex arifolius* nouveau pour le Grande Bretagne, tout en vous félicitant de cette belle acquisition pour votre Flore. Mme. Thellung va bien, merci, nous avons un petit garçon depuis le mois de mai. Meilleures amitiés de votre bien dévoné."

" Zurich, December 18, 1924.—J'ai bien reçu, il y a peu de temps, le ' Report ' for 1923, et je m'empresse de vous exprimer mes meilleurs remerciments et mes félicitations sincères. Le ' Report ' contient, comme toujours, une foule de notes précieuses et d'indications fort intéressantes. Je vois avec plaisir que vous avez mis à profit mes déterminations des plantes adventices et que vous me faites l'honneur de citer regulièrement mon nom.

[P. refers to the page in the Report.]

P. 38. *Buphthalmum speciosum* n'est certainement pas une combination nouvelle; la plante figure sous ce nom dans presque toutes les Flores récentes de l'Europe centrale et orientale. Je ne sais pas si la citation ' Schreber (*l.c.*) ' est exacte, mais le combinaison *B. speciosum* existe depuis longtemps.

P. 38. *Xanthium spinosum* trouvé en Bulgarie dans des dépôts de l'âge néolithique ???. Impossible!! J'ai rendu attentif à cette affaire le Monographe du genre *Xanthium* Dr. J. F. Widder, à Graz (Autriche). Il résulte de ses recherches que le détermination des faux fruits est exacte, mais que l'âge du dépôt est absolument *uncertain*, les fouilles ayant été faites par un *amateur* qui ne mérite pas de confiance! Il n'y a donc rien à changer à ce que j'ai dit dans ma Flore Adventice de Montpellier.

P. 42. Je suis très content de voir apparaître le *Crepis capillaris*, var. *anglica* Druce & Thell.

P. 55. *Polygonum nodosum* Pers. Les noms dépourvus de nombre et munis d'un astérique, signifient, chez Persoon, comme vous avez *pointed out* à juste titre (Rep. B.E.C., 1914 (1915), 32) des espèces de

position douteuse et non pas de sous-espèces, les espèces sans numéros ne sont souvent pas placées immédiatement après les espèces avec que Persoon les compare respectivement. Le cas du *Polygonum nodosum* en offre un example nouveau. Si Persoon avait voulu traiter le *P. nodosum* comme sons-espèce, il l'aurait sans doute placé après le *P. Persicaria* (avec lequel il le compare) et non pas après le *P. lapathifolium*. Voir aussi Schinz et Thell. in Vierteljahrschr. Naturf. Ges. Zurich lxvii. (1923), 475.

P. 68. *Scirpus Tabernaemontani* × *triqueter* = *S. arunensis*. Un nom plus ancien est .peut-être *S. Duvalii* Hoppe (cité généralement comme synonyme de *S. carinatus*), dont les échantillons originaux possédent, d'après G. F. W. Meyer Fl. Hanov. Excurs. (1849), p. 614, des points rouges sur les glumes. Mais vous avez tout de même eu raison de créer, au moins provisoirement, un nom nouveau non ambigu.

P. 130. Schinz & Keller. J'aurais bien aimé vous voir citer le livre complet, avec mention des éditeurs de cette nouvelle édition. Vous pouvez imaginer que M. Schinz ne m'aurait n'avait pas cité comme coediteur, n'avait pas été moi qui ai fait les 90% du travail, ce qui est du reste clairment reconnu dans la préface. La divergence de la nomenclature avec les Flores de Murr et de Lindman, qui vous citez, sont en effets bien regrettables. Mais si vous laissez entrevoir que c'est la faute du système employé, je ne puis pas me déclarer d'accord avec vous. Ces mêmes divergences subsisteraient avec n'importe quel 'set of rules!' vous faites remarquer à juste titre, que les différences ne sont pas purement onomastiques, mais réponsent souvent sur des divergences d'opinion quant à la délimitation des genres et des espèces. Il est fort regrettable en effet qu'une entité systématique change souvent avec le rang hiérarchique, aussi de nom. Ainsi nous sommes obligés d'appeler l'Anagallis bleu *A. arvensis*, sub-sp. *caerulea* (Schreb.) Volkmann, 1904 (et non pas sub-sp. *femina* (Miller) Schinz et Thell., 1907), bien que *A. caerulea*, date de 1771 et *A. foemina* de 1768. Mais votre principe qu'une entité systématique devrant conserver son nom primitif dans n'importe quel rang, n'est pourtant pas pratiquable à cause des changements nombreux qu'il nécesserait. Ainsi (pour ne citer qu'un petit nombre d'exemple) le nom de *Primula vulgaris* Huds. 1762 (comme vous citez à la page 109) devrant céder à celui de *P. acaulis* (L. 1753 pro var.): *Epilobium Lamyi* F. Schultz (1844) devrait s'appeler *E. canescens* (Döll 1843 pro var.) Thell. (1905); *E. Fleischeri* Hoch. = *E. minus* (Hegenb. 1821 pro var.); *Solanum luteum* Mill. = *S. villosum* (L. 1753 pro var.) Lam.; *Valerianella rimosa* Bart. (*Auricula* DC.) = *V. dentata* (L. 1753 pro var.) comb. nov. (non Pollich); *Gentiana Clusii* Perr.-Song. = *G. vulgaris* Neilr. pro var.) Beck, etc., etc. Les auteurs autrichiens ont fondé sur des noms variétaux une foule de combinaisons nouvelles invalidées par les Règles Internationales. Il ne faut pas oublier que depuis l'apparition de la Flore de Lindman, notre connaissance de la synonymie de certaines espèces a été approfondie, et qu'il en a résulté un certain nombre de changements. Je suis convaincu que Lindman accepterait aujord'hui, dans la grande majorité des cas de différences purement nomenclatoriques, notre manière de voir. M. Murr n'entre pas en compte en matière de système nomenclatorique. On voit tout de suite qu'il ne suit pas un système défini, mais qu'il choisit les noms arbitreusement à son gré. Il suit souvent la 2me édition de la Flore de Fritsch (1909), qui présente certaines différences de nomenclature avec Schinz et Keller; mais dans la 3me édition de Fritsch (1922) les différences avec la 4me édition de Schinz et Keller (1923) sont minimales.

P. 109. *Primula elatior* Hill Veg. Syst. 1765 (non alior) = *veris* × *vulgaris*. *P. officinalis* Hill, *l.c.* = *elatior* Schreb. et auct. Voir Bull. Herb. Boiss., 1907, p. 333.

P. 37. L'*Heracleum* figuré dans le Gard. Chron., 1923, sous le nom de *H. giganteum* n'est certainement pas l'*H. villosum*, qui a les feuilles non divisées (seulement lobées), mais probablement l'*H. persicum* Desf. On pourrait songer aussi à l'*H. Mantegazzianum* Somm. et Lev., qui est très fréquemment cultivé et subspontané actuellement dans l'Eur. centrale; mais cette espèce a les feuilles 3-séquées ou (très rarement) 5-séquées, tandis que les feuilles du *persicum* sans 5 à 7 séquées.

P. 330. *Epipogon Epipogium* ne me semble pas être une combinaison valable. Le genre a d'après nos récherches (Bull. Herb. Boiss., 1907, p. 401), valablement été publié, en 1814, par Swartz (Summa Veg. Scand., p. 32), comme *Epipogium*; *Epipogum* Gmelin (1747) est pré-linnéen, *Epipogon* ne daterait d'après Peffer, que de 1853 (Ledeb. Fl. Ross., iv., 77).

J'espère que vous avez reçu mes 'Beiträge sur Nomenklatur der Schweizerflora' (viii.) et ma note 'Uberdie Heimat des Liebstockels (*Levisticum officinale*)' que je vous ai adressés en décembre 1923. Vous en avez probablement remis l'analyse au prochain Report?

Je vais beaucoup mieux que l'année passe, mais je ne suis pas encore complètement remis. Etant bien en retard pour mes travaux personnels et surtout pour mon long travail sur les Ombellifères de l'Europe centrale, qui doit, si possible, être achevé au plus tard, au printemps prochain, il m'est actuellement impossible de m'occuper d'autres choses!

J'espère pouvoir me livrer à l'etude de vos plantes adventices au printemps 1925.

Je termine en vous adressant, cher Monsieur, mes meilleurs voeux de nouvelle année.

"Zurich, August 26, 1926.—J'ai trouvé enfin le temps pour parcourir le dernier 'Report,' et je m'empresse de vous présenter mes meilleurs remerciments, ainsi que mes félicitations sincères pour vos travaux et pour la distinction honorifique, hautement méritée, que vous a accordée la Société en vous nommant Secrétaire honoraire et en vous offrant ce joli 'Ex-Libris.' J'ai lit avec grand intérêt votre 'Note on Nomenclature,' et j'approuve en général vos idées. Vos objections vis-à-vis des Règles Internationales sont la plupart justifiées, mais il me semble inopportun d'introduire des modifications qui compromettraient de nouveau la stabilité de la nomenclature. Je suis du reste très curieux d'apprendre quelles résolutions auront été prises par le Congrès d'Ithaca. Votre proposition de maintenir le plus ancien 'trivial' quand l'entité en question change de rang hiérarchique est sans doute logique, mais son application stricte aurait de grands inconvénients, puis qu'il en résulterait une foule de changements de noms, surtout quand une variété est élevée au rang d'espèce :—par ex., l'*Epilobium Fleischeri* de nos Alpes devrait prendre le nom insignifiant d'*E. minus*, *E. Lamyi* devrait s'appeler *E. canescens*, *Dactylis Aschersoniana* = *D. lobata*, etc., etc.

Je vous envie de vos beaux et fructueux voyages en Orient, dans le Nord de l'Europe, etc. Le *Vogelia* récolté en Palestina n'est certainement pas le *paniculata*, mais l'espèce voisine *V. apiculata* (Fisch. et Mey.) Vierhapper.

P. 774. *Crepis Druceana* Murr semble être identique, ex descr. avec *C. capillaris*, var. *anglica* ! C'est sans doute une forme de valeur systématique élevée.

P. 779. *Lippia nodiflora.* Je pense qu'il s'agit de *L. canescens* H. B. K., von Fl. Adv. Montpell.

P. 864. *Lepidium Smithii* Hook., var. *dubium*. Quid ? Pourriez-vous m'indiquer auteur et lieu de publication ?

P. 876. *Chaerefolium sylvestre*, var. *angustisectum* et *latisectum* (Druce) = *C. silvestre*, sub-sp. *silvestre* (L.), var. *genuinum* (Gr. & Godr.) Sch. et Thell., f. *angustisectum* et *latisectum* (Druce) Thell. in Hegi Ill. Fl. M. Eur. v., 12, 1020 (1925).

P. 878. *Erigeron mucronatus* DC., var. *Karwinskianus* DC. = var. *mucronatus* (DC.) Aschers.

P. 925. Je vois avec plaisir que M. Sprague se declare, ici parti des Règles Internationales, mais je m'étonne que d'autre part il propose des modifications en partie assez profondes et causant des changements de nomenclature nombreux.

P. 930. *Calamagrostis lanceolata* ou *C. canescens* ? M. Sprague nous reproche de ne pas distinguer entre validité taxonomique et nomenclaturale. Nous nous sommes toujours rendu compte que cette difference existe ; mais les Règles ne permettent pas de faire cette distinction quelquefois assez délicate. Je crois toujours que *Arundo canescens* Weber n'est pas valable en vertu de l'Art. 15—' Each natural group of plants can bear only one valid designation, namely, the oldest ' (si Weber mentionne la même espèce, en même temps sous deux noms differents, savoir *A. calamagrostis* L., 1753, et *A. canescens* Weber, 1780, ce n'est, à mon avis, que le premier nom qui correspond aux éxigences de l'Art. 15), et ne saurait donc représenter ' the oldest valid name in the group in question,' prévu par l'Art. 56. Les idées de M. Sprague sont absolument logiques mais, pour le moment, c'est un avis personnel, et ce sera l'affaire d'un Congres futur d'adopter ou de rejeter la distinction entre validité taxonomique et nomenclaturale, non contenue dans les Règles actuellement en vigueur.

Pp. 999 et seq. Je suis très content de voir la liste complète de la Flore Adv. du Port de Cardiff, qui m'a toujours vivement intéressé.

P. 1005. *Lepidium densiflorum* Schrad. est d'origine nord-americain et le synonyme de *L. incisum* Banks & Soland. est à rayer. Les auteurs ont eu le tort de se fier trop à l'Index Kewensis. J'ai passé 3½ semaines à la montagnes (Vallée de Weisstannen Alpes de St Gall) avec ma famille. La Flore y'est plutôt pauvre, et le temps a été déplorable, mais je suis pourtant arrivé a decouvrir des hybrides de *Juncus*, *Epilobium*, *Prunella*, *Carduus*, *Cirsium*, *Crepis*, *Petasites*, *Valeriana*, etc., en partie intéressant, notamment *Epilobium alpinum* × *montanum* hybr. nov."

Je vous félicité de vos beaux travaux de cette année et je vous remercie cordialement de votre livret 'Botany of the Upper Thames,' que vous avez bien voulu m'envoyer.

Je possède de notre part l'avant dernière edition de 'Hayward's Bot. Pocket Book.' J'espère que je pourrai bientôt m'occuper de vos plantes. Je crains que je ne puisse pas faire grand chose des plantes indigènes en Angleterre, dont je ne connais pas les sub-divisions (races). Il m'a semble par un examen rapide que vous avez le vrai *Senecio erraticus*, mais aussi (comme cela arrivé très souvent ailleurs) de nombreuses formes de passage difficile à classer vers le *S. aquaticus.* Il est possible, comme vous le dites, que le *Crepis capillaris*, var. *anglica* sort une bonne sous-espèce; dans ce cas on aura la choix entre les épithètes *anglica* (Druce et Thell. pro var.) et *Druceana* (= *C. Druceana*) = *biennis* × *capillaris* ? Murr in Rep. B.E.C., 1925, 774 (1926) si, comme je le suppose, le *C. Druceana* est la même plante que le var. *anglica*.

Je pourrais vous envoyer la suite et fin de mon travail sur les Ombellifères dans la Flore Hegi.

Agréez, cher Monsieur, la nouvelle assurance de mes sentiments bien devoués."

"Zurich, April 19, 1928.—Je vous remercie bien cordialement de l'envoi gracieux de votre nouvel ouvrage 'British Plant List' ed. 2. Je suis plein d'admiration; c'est l'oeuvre mure d'un homme à la force de l'âge sans trace de l'âge vénérable de son auteur. Elle doit avoir couté un travail énorme! L'arrangement a été fait avec une habilité expérimentée, les renvois aux travaux monographiques sont particulièrement précieux. Je vois avec plaisir que vous me faites l'honneur de citer ma modeste personne parmi les collaborateurs. *Lepidium.* Dans ce genre critique et compliqué quelques erreurs légères se sont glissées dans la 'List.' *L. Draba* e. *virescens* = *viridescens* Dr., 1917. *L. Iberis* DC. = *L. graminifolium.* *L. apetalum* Willd. n'est certainement pas la vrai espèce, mais *L. apetalum* auct. = *densiflorum.* *L. Desvauxii* b. *glabripes.* Cette variété appartient au *L. peregrinum.* *Amaranthus chlorostachys* b. *pseudo-reflexus* Willd. lire *pseudo-retroflexus* Thell. *Avena fatua* b. *pilosa* Syme. Je croyais qu'il existe seulement une var. *pilosissima* Syme Eng. Bot. ed. 3, xi. (1872), p. 79 = *pilosissima* S. F. Gray, 1821 = type du *fatua*), si riellement il existe une var. *pilosa*, je serais bien content d'en avoir la citation exacte et la diagnose *A. fatua* × *sativa* = *Marquandii.* Est-ce un nomen novum (loc. loco.) pas encore publié ailleurs? Quant aux Nomina conservanda et Nomina duplicata (tautologica), je comprends bien votre point de vue, qui est absolument lógique, mais je suis partisan des Règles Internationales par principe! Faut-il que vous ayez bientôt mes déterminations des pl. advs. pour le *next Report?* Je suis très occupé a écrire un petit livre sur l'origine des plantes cultivées. Bien a vous.

Mes félicitations aussi pour la "Flora of Oxfordshire."

THISELTON-DYER, Sir W. T. 1843-1928. The son of a fashionable physician, he was born in Westminster on July 28, 1843, and died at Witcombe, Gloucestershire, on Christmas Eve, 1928. He was educated at King's College School where he was first mathematical scholar. He then entered King's College to study medicine, but his inclination was otherwise. He came to Oxford as a Junior Student at Christ Church. There he began Field Botany and made the acquaintance of Daubeny and Rolleston. Whatever may have been lacking in Daubeny as a botanist, his influence on Dyer was great and permanent. He joined our Society in 1867 and recorded a small-flowered form of *Senecio squalidus* (see Fl. Oxon, ed. 2. p. 240) which he called *parviflorus*, and also *Mentha piperita* from Boar's Hill, Berks (see *Fl. Berks*, p. 392). In the same year he obtained a First Class in the final school of Natural Science, and in 1871 contributed an article on Oxfordshire plants to the *Journal of Botany*. He was the first finder of *Eleocharis uniglumis* in the county. In 1868 he was appointed to the Chair of Natural History at the Agricultural College at Cirencester, and produced with the Professor of Chemistry a useful text book on "How Plants Grow." In 1869 the compact and useful "Flora of Middlesex," which had been prepared by Henry Trimen in conjunction with Dyer, was issued. Then he took his B.Sc. at London, and in 1870 was appointed Professor of Botany at the Royal College of Science at Dublin. He occupied this position for two years, and then came back to the Chair of Botany at the Royal Horticultural Society at South Kensington. A witty and jealous contemporary alluded to him as a Professor of "Haughticulture" for he did not suffer fools gladly and exhibited a distinct "side" in his bearing. He was appointed under Hooker an assistant Director at Kew in 1875, a position made smoother by his marriage to Miss Hooker, and in eight years' time he succeeded his father-in-law as Director, a post which he held till Hooker's death in 1905. During that period he proved himself a very capable, if autocratic, administrator. He was active, and liked to see other people busy in the very varied departments of that great institution which had not only to deal with home interests but which had its ramification the world over. If the *Journal of Botany*, then under the editorship of Mr James Britten, were alone consulted, one would obtain a very unfair estimate of Dyer and of Dyer's work. Britten had once been an assistant at Kew, and then either Hooker, or Dyer, or both, must have rapped his knuckles pretty smartly, for a hatred was aroused in Britten's mind—not that that was a difficult operation—and in season and out of season niggling and biting criticisms, not without humour, for he had a vein of pungent humour, were made. The introduction of the *Kew Bulletin* was deeply resented (see *Journ. Bot.*, 88, 1891). He called it a "curious little erratic publication." The preparation of the "Flora of Africa" was severely criticised in this *Journal*, pp. 47, 48, 1901, where Britten states that the "Flora of Tropical Africa" was entrusted to Dyer in 1872. This was an unfortunate slip as it led Dr Dyer to commence a libel action which was stayed only on Mr Britten publishing in his own Journal (80, 1901), and in three or four other scientific papers, this most humble and complete apology—"With reference to the editorial notes contained in the *Journal of Botany* for January 1901, p. 47 and 48, reflecting on you and your work in connection with the preparation of the *Flora of Tropical Africa*, I desire to offer to you an expression of my sincere regret for the same. The preparation was not committed to you until the year 1891, and my statement that it has been in your hands since 1872 is incorrect. I sincerely apologise to you for having imputed to you unnecessary delay in its preparation, and I desire to withdraw all reflections and imputations affecting you of every kind whatever contained in the editorial notes referred to." £100 had also to be paid, which Dr Dyer (it is said, perhaps, *ben trovato*), with a rapier thrust, handed over to an ultra-Protestant charity which qualified Mr Britten (the Secretary of the Catholic Truth Society) to a Life Governorship. An instance of the unfair criticism is to be found in his review of the *Flora Capensis* (*Journ. Bot.*, 314, 1897). It is pleasant to know that in later days an action which Sir William took in regard to a Roman Catholic Provided School in Gloucestershire, led Mr Britten to write and thank him. At Kew Dyer did yeoman service in his endeavour to make it the centre of reference on all Botanical Economic questions, and thus to become an Imperial Institution. Few would venture to question his success in this work. He served on many committees. He acted as Royal Commissioner at the Melbourne Centennial Exhibition of 1888, of the Paris International Exhibition of 1900, and of the St Louis Exhibition of 1904. He was brought into close touch with the prominent scientists of the day, was Vice-President of the Royal Society in 1896-7, but declined a nomination for the Presidency of the British Association. In 1892 he was created C.I.E., and in 1899 K.C.M.G., that year witnessing his election as Hon. Student of Christ Church. It may be stated that the important step of sending South American rubber plants to Ceylon, the 1900 seeds of which were smuggled from Brazil by the late Sir W. Wickham Dyer and germinated at Kew, formed the parent plantation from which the vast rubber plantations of the East have been developed. He was also instrumental in introducing the East Indian variety of banana to the West Indies. He assisted Darwin in his researches on the fertilisation of orchids and was on intimate terms with Huxley and other workers. In 1905 he retired to Gloucestershire where he served on the magisterial bench. He was the representative of the University of Oxford on the Education Committee of the County, and a Member of the Council of the University of Bristol. He did great service for the revised edition of Liddell and Scott's "Lexicon," in which I was privileged to have considerable correspondence with him connected with the Oxford copy of Dioscorides. See also memoir by Dr A. B. Rendle (*Journ. Bot.*, 54, 1929). Prof. Bower said of him:—"Those who knew Dyer in the days of his early vitality will be best able to measure what British Botany owes to him . . . he was a potent stimulus in the decade that immediately followed the publication of the "Origin of Species."

YAPP, Professor RICHARD HENRY. 1871-1928. The son of Mr R. K. Yapp of Orleton, Hereford, and brother of Sir Arthur Yapp, he was educated at Hereford and, as a scholar of St John's, at Cambridge. There he was captain of the University Lacrosse team in 1898-9. He took first class in the Natural Science Tripos, part I., 1898, and part II. in 1899, and was immediately elected "Frank Smart Student of Botany" at Gonville and Caius College. On the Cambridge University expedition to the Siamese-Malay States he was the appointed Botanist. He was Curator of the Herbarium for 1900-3, and was Secretary and Recorder of the British Association, 1902-11. He went as Professor of Botany to the University College, Aberystwyth, 1904-14, then he joined Queen's College, Belfast, until 1922, when he was elected as Mason Professor of Botany at Birmingham University. He joined our Society in 1910, and has been a valued contributor to our pages. He had in preparation for us, what would have been a most useful paper. I made his acquaintance at Cambridge at the meeting of the International Phytogeographical Society, when his cheery manner endeared himself to us all. Like David, he was of a ruddy complexion, and one would have thought, as one would have wished, that his days might have been long in the land. Among his publications are "Myrmecophilous Ferns," "The Vegetation of Wicken Fen," a suggestive paper on "*Spiraea Ulmaria* and its var. *denudata*," and "The Salt Marsh Vegetation of the Dovey Peninsula." To the Ecological Society, of which he was President in 1921, he contributed an address on "The Concept of Association," and later a paper on "The Concept of Habitat." In the autumn of 1927 a meeting of the British Ecological Society was held in Birmingham, which gave one the occasion of seeing the splendid Botanical Department which had been erected under Professor Yapp's supervision. We all looked forward to seeing him take the first place in the Proceedings, and I was to have been his guest. Alas, the beginning of an insidious disease had asserted itself and he was forced to be absent from our meetings. But his resistance to the foe was strong, and during my visit he seemed to regain something of his power—he never lost his charm. He had married in 1913 a charming Swedish lady, Lajla, daughter of Dr Klintberg, by whom he had two children. At the early age of 57 he has passed away amid a very general and a very real regret. He was a good correspondent, for he knew what to say and how to say it. There is an appreciative memoir of him by Prof. Weiss in *Journ. Bot.*, 85, 1929.

NEW COUNTY AND OTHER RECORDS.

ABBREVIATIONS.—*Rep. B.E.C.=Report of the Botanical Society and Exchange Club; Trans. Bot. Soc. Edin.=Transactions of the Botanical Society of Edinburgh; Wats. B.E.C.=Report of the Watson Botanical Exchange Club; Devon. Tr.=Transactions of Devonshire Association of Science, &c.; Journ. Bot.=Journal of Botany; Nat.=Naturalist; N.W. Nat.=North Western Naturalist,* ed., A. A. Dallman; *W.F. Mag.= Wild Flower Magazine,* ed., Mrs Dent; *Fern Gaz.=British Fern Gazette,* ed., F. W. Stansfield; *Rep. Marlb.=Report of the Marlborough College Natural History Society; R.I.C.=Journal of the Royal Institute of Cornwall;* †=Adventive; *=New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names or before a binomial means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Vice-county in *Topographical Botany*; [ ] enclosing a record mean that confirmatory evidence is needed.

We are under great indebtedness to Dr A. Thellung for his most kindly help in determining so many of the adventive species, almost his last work before his lamented death, and we have also to thank the Director of the Royal Botanic Gardens, Kew; Mr J. Fraser, Mr W. O. Howarth, Prof. C. H. Ostenfeld, Prof. O. E. Schulz, Dr Probst, Dr Ronniger, Dr J. Murr, Dr E. Almquist, M. Jaquet, Mr A. Bennett, Dr Drabble, Mrs Gregory, Mr C. E. Britton, Dr Dahlstedt, M. Patrice de Riencourt, Mr C. E. Salmon, Mr W. H. Pearsall, Mr A. R. Horwood, Mr W. Watson, Mr D. Lumb, Mr C. V. Marquand, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

2/1. THALICTRUM FLAVUM L. Narrow leaved form on the sand-dunes near Formby, S. Lancs, F. W. HOLDER.

2/2. T. MINUS L., var. KOCHII Fr. Anacoona, Sligo, and var. CALCAREUM (Jord.). Newcastle sand-dunes, Co. Down, Miss I. M. ROPER. Sp. non vidi.

2/3. T. MARITIMUM (Syme). *T. dunense* auct. ang. ? of Dumort. In abundance on the sand-dunes, Husinish, N. Harris, DRUCE.

4/2. ADONIS AESTIVALIS L. Burton-on-Trent, Staffs, Sir ROGER CURTIS. Det. Dr PROBST.

6/4. RANUNCULUS AURICOMUS L., var. RENIFORMIS Kit. Humberstone and Thornby Road, Leicester, BEMROSE.

6/7. R. FLAMMULA L., var. PETIOLARIS Lange. Abundant in Harris, as at the Lady's Loch and Amhuinnsuidh, DRUCE.

Var. SERRATUS Pers. Stapleford Woods, Notts, R. BULLEY; Scilly Isles, Miss SMITH, ex THURSTON.

6/20. R. FLUITANS Lam., var. BACHII (Wirtg.). Monmouth, Rev. H. H. HARVEY.

6/23. R. DROUETII F. Schultz. Ditches in Achill Sound, Mayo, DRUCE.

6/26. R. PSEUDO-FLUITANS Baker & Foggitt. Durweston, Dorset, DRUCE.

Var. MINOR Pearsall. Retford, Notts, Rev. H. H. HARVEY.

6/27. R. SPHAEROSPERMUS Boiss. & Bl. River Pownell, near Letchworth, Herts, T. A. DYMES.

6/33. R. FICARIA L., var. FLORE PLENO. Buxted, Sussex, H. D. BONNOR.

11/1. AQUILEGIA VULGARIS L. Dunmere Wood, Cornwall, C. AMHERST.

20/1. CASTALIA ALBA (L.) Link, var. OCCIDENTALIS (Ostenf.). Loch Valtos, Lewis, DRUCE.

21/2. PAPAVER RHOEAS L., var. PRYORII Dr. Ware, Herts, Miss TROWER; Burton, Staffs, DRUCE.

21/3. P. DUBIUM L. Very small, slender specimens near Tarbert, Harris, DRUCE.

†23/2. GLAUCIUM CORNICULATUM (L.) Curt. In some plenty, small and very attractive specimens, Burton-on-Trent, Staffs, DRUCE.

†24/1. ROEMERIA HYBRIDA DC. On mill refuse at Hambleden, Bucks, Lady ALETHEA BUXTON.

†28/1. ESCHSCHOLZIA DOUGLASII Walp. Quite naturalised on cliffs to the east of Sheringham, Norfolk, F. E. SOWTER.

32/5. FUMARIA BORAEI Jord. Side of Rhodes House, Oxford, DRUCE.

†33/4. MATHIOLA BICORNIS (S. & S.) DC. Probably this, Dagenham, S. Essex, DRUCE, MELVILLE and SMITH; Burton-on-Trent, Staffs, DRUCE.

35/2. RADICULA SYLVESTRIS Dr. Burton-on-Trent, Staffs, DRUCE.

†36/2. BARBAREA VERNA Asch. West Chiltington, Sussex; Uxbridge, Middlesex, A. WEBSTER. Agreed to by Dr PROBST and THELLUNG.

36/4. B. ARCUATA Reichb. Near the Three Pigeons, Milton, Oxon, DRUCE. Agreed to by Dr PROBST.

†36/5. B. INTERMEDIA Bor. Railway bank, Cinderhill, Notts, R. BULLEY; Flitwick, Beds; Baldoch, Herts, H. PHILLIPS.

39/1. CARDAMINE PRATENSIS L., var. FLORE PLENO. Culeaze, Dorset, Major G. WATSON; an attractive form at Loddon Bridge, Berks, DRUCE; Saltfleetby, Lincs, MASON.

39/2. C. AMARA L., var. UMBROSA DC. Near the Nunnery, Thetford, H. PHILLIPS.

39/4. C. FLEXUOSA With. Ulladale, N. Harris, DRUCE.

†42/2. ALYSSUM SAXATILE L. As a garden straggler, Garford, Berks, DRUCE.

43/3. DRABA INCANA L. Rocky cliffs, Anacoona, Co. Sligo, DRUCE.

44/1. EROPHILA STENOCARPA Jord. Barnham, Suffolk, H. PHILLIPS.

45/2. COCHLEARIA OFFICINALIS L. Husinish, N. Harris, DRUCE.

45/3. C. ALPINA (Sweet.) Wats. Anacoona, Co. Sligo, DRUCE.

45/5. C. ANGLICA L. Boyne-side, near Drogheda, Meath and Louth, PRAEGER in *Ir. Nat.*, 94, 1928.

†48/1. WILCKIA MARITIMA Scop. Maryborough coup, near Glasgow, GRIERSON.

†49/3. SISYMBRIUM ALTISSIMUM L. Birkenhead Docks, Cheshire, DRUCE; Parkstone, Dorset, L. B. HALL.

†49/4. S. ORIENTALE L. Bournemouth, Lymington, Christchurch, S. Hants, L. B. HALL; Southport, S. Lancs, HOLDER and WAGSTAFFE; Dagenham, Essex; Boston, N. Lincs, DRUCE.

†49/5. S. IRIO L. Newport, Isle of Wight, LONG, teste FRASER; Burton-on-Trent, Staffs, DRUCE.

49/6. S. OFFICINALE (L.) Scop., var. LEIOCARPUM DC. Near the sea, Pirnmill, Arran, GRIERSON.

†49/13. S. LOESELII L. Avonmouth, W. Gloster, C. & N. SANDWITH; Dagenham, Essex; Burton-on-Trent Staffs, DRUCE.

50/1. ERYSIMUM CHIERANTHOIDES L. Near Colwall tunnel, Hereford, F. M. DAY.

†50/7. E. REPANDUM L. Bristol, N. Somerset; Avonmouth, W. Gloster, C. & N. SANDWITH.

†51/1. CONRINGIA ORIENTALIS L. In some plenty, but often dwarf, Burton-on-Trent, Staffs, DRUCE; Hallow Holgate, Lincs, MASON; Bassett, S. Hants, RAYNER.

†54/6. BRASSICA CHEIRANTHOS Vill. Bristol, W. Gloster, C. SANDWITH.

†54/17. B. JUNCEA (L.) Coss. Didcot, Berks; Splott, Glamorgan; Burton-on-Trent, Staffs; Boston, N. Lincs, DRUCE. Det. Dr PROBST. Falconhurst, Kent, Sir G. TALBOT. Det. THELLUNG.

†54/20. B. GALLICA (Willd.) Dr. (ERUCASTRUM POLLICHII). Limerick, CHASE in *Ir. Nat.*, 97, 1928.

56/2. ERUCA ERUCA (L.) Frequent on ballast, Hillside, S. Lancs, HOLDER and WAGSTAFFE.

(The Bursas have all been determined by Dr Almquist.)

59/2. BURSA ABSCISSA (E. At.). West Drayton, Middlesex; Northampton, DRUCE.

59/3. B. ANGLICA (E. At.). Burton-on-Trent, Staffs; Dropmore, Bucks, DRUCE.

59/4. B. BATAVORUM (E. At.). Cosgrove, Northants; Salmonby and Boston, N. Lincs; Market Deeping, S. Lincs, DRUCE.

59/6. B. BREMENSIS (E. At.). Little Crosby, MASON; Nelson, Lancs, TURNER.

59/7. B. BRITTONII (E. At.). Oxted, Surrey, LOUSLEY, as *mediterranea*; Berehaven, Co. Cork, 1927, DRUCE.

59/8. B. CONCAVA (E. At.). Newton lane, Chester [1], WATERFALL; forest in Teesdale [Y.64], LOUSLEY, as *Druceana*; Burton-on-Trent, Staffs; Horncastle, N. Lincs; Amhuinnsuidh and Husinish, N. Harris, DRUCE.

59/9. B. DRUCEANA (E. At.). Wimbledon, Surrey, 1820, W. BLAKE; West Drayton, Middlesex; Belfast, Co. Antrim; Glengariff, Co. Cork, DRUCE.

59/17. B. MEDITERRANEA (E. At.). Devon, HARVEY; Hayes, Kent [V.142], LOUSLEY; Blarney, Co. Cork; Bulwick, Northants, DRUCE.

59/20. B. PATAGONICA (E. At.). Henley-on-Thames, Oxon; West Drayton, Middlesex; Bindon, Dorset; Farnham, S. Hants; Burton-on-Trent, Staffs; Mallow, Co. Cork, DRUCE; Little Crosby, Lancs, MASON.

59/25. B. SINUOSA (E. At.). Henley and Bicester, Oxon; Wareham, Dorset; Walsall, Staffs; Boston, N. Lincs; Husinish, N. Harris; Cave

Hill near Belfast, Co. Antrim; Blarney, Co. Cork, DRUCE; Melmerby, Cumberland, MASON.

59/26. B. TREVIRORUM (E. At.). Welwyn, Herts, 1820, W. BLAKE; Dungarvan, Co. Waterford, DRUCE.

59/27. B. TURONIENSIS (E. At.). Middlesdown, Surrey [Y.123], LOUSLEY; Chester [1 and 2], WATERFALL; Burton-on-Trent, Staffs, DRUCE.

†61/2. LEPIDIUM LATIFOLIUM L. Salt marsh, Sligo Harbour, Miss I. M. ROPER.

†61/8. L. PERFOLIATUM L. Limber, near Grimsby, S. A. COX, ex RAYNER; Nelson, Lancs, A. TURNER; Falconhurst, Kent, Sir G. TALBOT; Burton-on-Trent, Staffs, DRUCE; Limerick, CHASE in *Ir. Nat.*, 94, 1928; Avonmouth, W. Gloster, C. & N. SANDWITH.

†61/10. L. CHALEPENSE L., var. AURICULATUM Boiss., f. CANESCENS Thell. Burton-on-Trent, Staffs, DRUCE. Det THELLUNG.

†61/17. L. LINOIDES Thunb. Galashiels, Selkirk, 1926, DRUCE and Miss HAYWARD; probably this from Dagenham, Essex, DRUCE.
Var. IBERIOIDES (Desv.). Dagenham, Essex, MELVILLE. Det. THELLUNG.

†61/19. L. TRIFURCUM Sond. Dagenham, Essex, MELVILLE. Det. THELLUNG.

†61/20. L. VIRGINICUM L. Aldrington and Billingshurst, Sussex, WEBSTER; Burton-on-Trent, Staffs, DRUCE; Beaconsfield, Bucks, Mrs WEDGWOOD; Yiewsley, Middlesex, MELVILLE, teste Dr PROBST.

61/22. L. DENSIFLORUM Schrad. Didcot, Berks; Burton-on-Trent, Staffs; Cardiff and Splott, Glamorgan; Bristol, W. Gloster; Dagenham, Essex, DRUCE, and as a "forma PLURICAULIS" (BIENNIS ?), teste Dr THELLUNG, from Burton-on-Trent, Staffs, DRUCE.

†61/24. L. NEGLECTUM Thell. Fowey, Cornwall; Putney, Surrey, DRUCE. Det. THELLUNG.

†61/25. L. RAMOSISSIMUM A. Nels. Splott, Glamorgan, 1927; Par, Cornwall, DRUCE.

†69/1. BOREAVA ORIENTALIS J. & S. Dagenham, S. Essex, R. MELVILLE.

†72/1. MYAGRUM PERFOLIATUM L. Morland Siding, Lanark, GRIERSON; Hillside, S. Lancs, HOLDER and WAGSTAFFE.

†74/2. BUNIAS ORIENTALIS L. Dagenham, Essex, MELVILLE.

†76/3. Rapistrum rugosum (L.) All. Burton-on-Trent, Staffs, Druce.

77/1. Cakile Cakile (L.) Karst. Sand-dunes, Husinish, N. Harris, Druce; Southwick Bay, Caithness, Manson; Alderney, Mrs Hichens.

†85/1. Reseda alba L. Halton Holgate, Lincs, Mason; Birkdale, Southport, Lancs, Miss R. Bright.

85/2. R. lutea L. Aintree, Lancs, Mason.
Var. longifolia Ten. Par, Cornwall, Medlin, ex Thurston. Det. Dr Probst.

88/4. Viola Riviniana Reichb., var. vicina (Martr.-Don.). Edinburgh, Skene in *Hb. Druce*.

88/5. V. rupestris Schmidt. Corstorphine Hill, Edinburgh, *Hb Bell*.
Var. glabrescens Hill. Albury, Herts, Druce.

88/6. V. canina × Riviniana. Penrose, Cornwall, Miss Lightfoot.

88/9. V. hirta L., var. Foudrasii R. & F. Thrumpton Hill, Notts, R. Bulley; Devil's Dyke, Newmarket, Cambridge, H. E. Fox.

88/10. V. calcarea Greg. Alum Bay, Isle of Wight, Hall.

88/12. V. epipsila Ledeb. Achill Sound, Co. Mayo; Glendalough, Co. Wicklow; Lismore, Co. Waterford; Blarney, Co. Cork, Druce; S. Hants, P. M. Hall.

88/15. V. variata Jord. Various localities in Orkney, H. H. Johnston; Spiggie, Zetland, Druce.

88/19. V. Lejeunei Jord. Melvich, Sutherland [4072], E. S. Marshall, as *Lloydii* var. *insignis*; Carlby, Lincs, Mason; Quoys, S. Ronaldshay, Orkney, H. H. Johnston.

88/20. V. Lloydii Jord. Bigging Birsay, Orkney, 1927, H. H. Johnston; Bix Bottom, Oxon, in yellow form, Druce.
Var. insignis Drabble. Stromness, Orkney, H. H. Johnston.

88/21. V. orcadensis Drabble. Sandwick, etc., Orkney, H. H. Johnston.

88/22. V. agrestis Jord. Near Hydnall Wood, N. Lincs, J. Chapple.

88/23. V. segetalis Jord. Melmerby, Cumberland, Mason; Clova, Angus, Rev. H. H. Harvey.

88/24. V. obtusifolia Jord. Letterkenny, Co. Donegal, Druce; Flitwick, Beds, H. Phillips.

88/26. V. RURALIS Boreau. Silverton, Devon, WATTS; Albury, Bucks; near Luton, Beds, DRUCE.

88/27. V. ANGLICA Drabble. Cavenham, W. Norfolk, DRUCE.

88/28. V. DESEGLISEI Jord., var. SUBTILIS (Jord.). Henley, Oxon, DRUCE.

88/31. V. LEPIDA Jord. Ousby, Cumberland, MASON, a scrappy specimen; Altnaharra, Durness, Sutherland; Thurso, Caithness; Big Sands, W. Ross, DRUCE.

88/34. V. CURTISII Forst. Fields near the sea, Loch Carron, W. Ross, FOX; Husinish, N. Harris; Borve, S. Harris. DRUCE.
Var. FORSTERI. Newburgh, Anglesey, MASON; Derrynane, Co. Kerry, DRUCE.

88/35. V. PESNEAUII Lloyd & Fouc. Croxton, Suffolk [381], ROBINSON; St Anne's on the Sea, Lancs, 1889, MASON.

89/3. POLYGALA BABINGTONII Dr. (GRANDIFLORA). Cliffs of Ben Bulben, Sligo, but not in very good condition, DRUCE.

89/4. P. DUBIUM Bellynck. Near Winton, Hants, DRUCE; Rodil, S. Harris, DRUCE.

†90/2. FRANKENIA PULVERULENTA L. Avonmouth, W. Gloster, C. & N. SANDWITH. A very interesting alien. It was once recorded by Hudson from Sussex. See " Dubious Plants," *Rep. B.E.C.*, 746, 1919.

†95/2. SAPONARIA VACCARIA L. Hillside, S. Lancs, HOLDER and WAGSTAFFE.

96/1. SILENE MARITIMA With. Isle of Ecérho, off Jersey, Mrs CLEMINSON.
Forma (var.) LOBATA (Salisb.). Fair Head, Antrim, Miss I. M. ROPER.

96/2. S. ANGUSTIFOLIA S. & T., var. RUBRA (DC.) Dr. Grown from a specimen collected near Welbeck, Notts, by R. GOULDING, ex H. W. KEW.

†96/5. S. ANGLICA L. Avonmouth, W. Gloster, C. & N. SANDWITH.

†96/15. S. CONOIDEA L. Avonmouth, W. Gloster, C. & N. SANDWITH.

†96/16. S. DICHOTOMA Ehrh. Burton-on-Trent, Staffs, Sir R. CURTIS.

†96/19. S. PENDULA L. Maryborough, Lanark, GRIERSON; Bristol, W. Gloster, C. SANDWITH.

†96/21. S. BEHEN L. Splott, Glamorgan, October 1927, DRUCE.

†96/24. S. MUSCIPULA L. On rubbish, Hambleden, Bucks, DRUCE; Avonmouth, W. Gloster, C. & N. SANDWITH.

†96/28. S. CATHOLICA Ait. Plantation above Habberley Valley, Worcester, Rev. J. H. ADAMS.

100/6. CERASTIUM VISCOSUM L. Tarbert, N. Harris, as a long petalled form; it was also seen at Glengariff, Co. Cork, DRUCE.
Var. ELONGATUM Dr. Porne, N. Somerset, June 1926, DRUCE.

100/8. C. SEMIDECANDRUM L., var. GLANDULOSUM Koch. Monifieth, Angus, Miss TODD.

100/9. C. TETRANDRUM Curt., var. ZETLANDICUM Murb. Cliffs of Moher, Co. Clare, DRUCE.
Var. CONGESTUM Dr. Husinish, N. Harris, DRUCE; Ross Links, Northumberland, FOX.

†100/12. C. TOMENTOSUM L. Hortal. Waste places, Freshfield, Lancs, DRUCE.

101/3. STELLARIA MEDIA Vill., var. APETALA (Ucria). Wakerley Wood, Northants, DRUCE.

101/4. S. NEGLECTA Weihe. Near Letterkenny, Co. Donegal, DRUCE.

102/2. ARENARIA CILIATA L., var. HIBERNICA (Ost. & Dr.) Dr. Anacoona, Co. Sligo, August 1928, DRUCE.

102/7. A. PEPLOIDES L., var. DIFFUSA Hornem. Nisishee, S. Harris, DRUCE.

†102/14. A. BALEARICA L. Clapham, Yorks, FRANKLAND and HOLDER; wall, Redland Park Road, Bristol, DRUCE.

103/7. SAGINA CILIATA Fr., var. FILIFORMIS (Jord.). Parkstone, Dorset, L. B. HALL.

103/8. S. APETALA Ard., var. IMBERBIS Fenzl. Sligo Harbour, Miss I. M. ROPER.

104/3. SPERGULARIA SALINA Presl, with winged and wingless seeds on same plant. Lady's Island Lake, Wexford, DRUCE.

†107/1. PORTULACA OLERACEA L. Sholing, S. Hants, RAYNER.

†108/1. CLAYTONIA SIBIRICA L. Helensburgh, Dumbarton, Miss YOUNG; Whissendine, Rutland; near Colwall, Hereford, F. M. DAY.

109/1. MONTIA FONTANA L. (LAMPROSPERMA Cham.). Tarbert, N. Harris, DRUCE.
Var. BOREO-RIVULARIS Dr. Marsham, Lancs, MASON.

109/2. M. VERNA Neck., var. INTERMEDIA Dr. Beaulieu, Gorley, S. Hants, L. B. HALL.

*111/2. ELATINE HEXANDRA DC. Studland Heath, Dorset, L. B. Hall. A very interesting discovery.

†112/3. HYPERICUM HIRCINUM L. In some quantity on the border of Castle Martyr, the park of the Earl of Shannon, Co. Cork. DRUCE.

112/12. H. QUADRANGULUM L. Peterculter, Aberdeen, Miss TODD.

†115/2. ALTHAEA HIRSUTA L. On rubbish, Woolacombe, N. Devon, Lady DAVY.

†115/3. A. ROSEA L. Didcot, Berks, DRUCE.

†116/2. LAVATERA SYLVESTRIS Brot. Cardiff, Glamorgan, DRUCE.

†116/4. L. OLBIA L. Coup near Monkland, Lanark, GRIERSON.

117/1. MALVA MOSCHATA L., var. HETEROPHYLLA Lej. & Court. Melmerby, Cumberland, MASON.

†117/9. M. PARVIFLORA L. Lockerley, S. Hants, DRUCE and Miss SALMON; Launceston Sewage Works, Cornwall, E. THURSTON; Burton-on-Trent, Staffs, DRUCE.
Var. MICROCARPA (Desf.) Fiori et Paol. Ware, Herts, DRUCE.

†122/1. HIBISCUS TRIONUM L. Edenbridge, Kent, Sir G. TALBOT.

123/3. TILIA CORDATA Mill. Mawsley Wood, Northants, DRUCE; Humphrey Head, Lancs, MASON.

124/1. RADIOLA RADIOLA (L.). Achill Sound, Co. Mayo, DRUCE.

†127/2. GERANIUM VERSICOLOR L. Weithiel, Cornwall, G. HOLLAND.

127/4. G. PRATENSE L., forma ROSEUM. Canal bank, Skipton, Lancs, FRANKLAND and HOLDER; with pale dove-coloured flowers, left bank of Avon, Bubbenhall, Warwick, ex Miss VACHELL.

†127/5. G. PHAEUM L. Shobdon, Hereford, V. MURRAY; Felixkirk, York, MASON; foot of Ben Bulben, Sligo, DRUCE and CHAPPLE; Gedney, Lincs, Miss J. COOKE.

†127/6. G. ENDRESII Gay. Strete, S. Devon, G. HAYNES; near Henfield, Sussex, E. PAYNE.

*127/7. G. PYRENAICUM Burm. f. Senny Bridge, Brecon, WADE.

127/11. G. ROTUNDIFOLIUM L. Burton, Cheshire, WATERFALL.

128/2. ERODIUM MOSCHATUM L'Hérit. Cobham, Kent, Miss STEVENS.

128/3. E. CICUTARIUM L'Hérit., var. BALLII (Jord.). On the dunes at Newcastle, Co. Down, after an interval of 75 years. Miss I. M. ROPER discovered this plant in August this year. Mr E. G. BAKER confirms the name.

132/1. OXALIS ACETOSELLA L., var. SUBPURPURASCENS DC. Melmerby, Cumberland, MASON.

†132/2. O. CORNICULATA L., var. PURPUREA Parl. Hemingby, N. Lincs, Rev. W. H. ISAACS, ex MASON.

†133/3. IMPATIENS PARVIFLORA DC. Eyford Park, E. Gloster, C. A. FELLOWES.

†133/4. I. GLANDULIFERA Royle. River bank at Heaton Mersey, L. T. ADAMS; railway embankment, Church Town, S. Lancs, HOLDER and WAGSTAFFE.

137/1. EVONYMUS EUROPAEUS L. St Catherine's Bay, Jersey, 1928, ARSENE.

147/1. GENISTA ANGLICA L., var. SUBINERMIS R. & F. By a single line railway, Pitchroy, Elgin, Lady ELPHINSTONE.

(The Leguminosae have been determined by M. Patrice de Riencourt de Longpré.)

149/3. ULEX MINOR Roth, var. LONGISPINOSUS (R. & F.) Dr. Near Leicester, G. J. V. BEMROSE.

151/3. ONONIS SPINOSA L., var. MITIS (L.). Det. as O. PROCURRENS var. MITIS P. DE RIENCOURT. Headington, Oxon, DRUCE; Grange, Lancs; Silloth, Cumberland, MASON.
Var. PARVIFOLIA (Rouy). Blossomville, Bucks, DRUCE. Det. as O. CAMPESTRIS, var. PARVIFOLIA.

†152/5. TRIGONELLA POLYCERATA L. Emrith, Norfolk, DIX.

†152/9. T. M. PROCUMBENS Reichb. Splott, Cardiff, SMITH; Burton-on-Trent, Staffs; Ware, Herts, DRUCE. Det. as M. CAERULEA.

†152/12. T. HAMOSA L. Near Glasgow, Lanark, GRIERSON.

†153/1. MEDICAGO FALCATA L. Hoylake, Cheshire, MASON.

†153/2. M. SYLVESTRIS Fries, var. CYCLOCARPA Hy. Dagenham, Essex, DRUCE.

†153/4. M. APICULATA Willd. Burton-on-Trent, Staffs, DRUCE; Par, Cornwall, MEDLIN, ex THURSTON.

153/4. M. HISPIDA Gaertn., var. CONFINIS (Koch) Burnat. Ware, Herts, DRUCE.

†153/5. M. ARABICA Huds. Burton-on-Trent, Staffs, DRUCE; near Glasgow, Lanark, GRIERSON.
Modif. MAJOR. Ware, Herts, DRUCE.

†153/20. M. MUREX Willd., var. MACROCARPA Moris. Brackenhurst coup, Lanark, GRIERSON.

†153/21. M. SPHAEROCARPA Bert. Brackenhurst coup, Lanark, GRIERSON.

†153/27. M. LACINIATA Mill. Emrith, E. Norfolk, DIX.

†154/2. MELILOTUS ALBA Desv. In very fine condition on mud dredged from river, Ware, Herts, DRUCE.

†154/4. M. INDICA All., var. EXALTATA Biv. Silloth, Cumberland, MASON.
Var. TOMMASINI (Jord.) Rouy. Barry, Glamorgan, DRUCE.

†154/6. M. INFESTA Guss. Burton-on-Trent, Staffs, DRUCE.

154/7. M. SULCATA Desf. Colchester, Essex, BROWN.

155/1. TRIFOLIUM MEDIUM (L.) Huds., var. PEDUNCULATUM Ser. Cumnor, Berks, DRUCE.
Var. BRACHYCALYCINUM Rouy. Cuckoo Nook, Staffs; Laghy, Co. Donegal, DRUCE.

†155/2. T. PRATENSE L., var. SATIVUM Schreb. St Anne's, Jersey, very large heads, DRUCE.

†155/4. T. INCARNATUM L., var. STRAMINEUM Presl. Maulden, Beds, MASON. Det., as MOLINERII, by P. DE RIENCOURT.

155/7. T. ARVENSE L., var. BRITTINGERI Weit. Polseath, Cornwall, DRUCE; Christchurch, S. Hants, Canon VAUGHAN; Llandisilio, Anglesey; Blundellsands, Lancs, MASON; Silloth, Cumberland, FOX; Southport, S. Lancs, DRUCE and C. BAILEY.

*155/11. T. STRIATUM L. Brynich, Brecon, WADE.

†155/15. T. ELEGANS Savi. Headington Wick, Oxon; Didcot, Berks; Ince Blundell, Lancs; Ware, Herts, DRUCE. Possibly a hybrid with HYBRIDUM at Headington Wick, Oxon, DRUCE.

155/16. T. REPENS L., var. PHYLLANTHUM Ser. Near Brighton, Sussex, Miss COTTES; Colchester, Essex, Lady DOUIE; Burton-on-Trent, Staffs, DRUCE.

155/22. T. FILIFORME L. Rinlac Warren, Lincoln, Miss J. GIBBONS.

†155/27. T. LAPPACEUM L. Garden ground, Gainsborough, W. Lincs, Dr WILLOUGHBY SMITH.

†155/37. T. RESUPINATUM L. Lockerley, S. Hants, Miss SALMON; Burton-on-Trent, Staffs, DRUCE.

†155/38. T. TOMENTOSUM L. Glasgow, Lanark, GRIERSON; Wymondley, Herts, H. PHILLIPS.

†160/2. LOTUS TETRAGONOLOBUS L. Burton-on-Trent, Staffs, DRUCE.

160/4. L. ULIGINOSUS L., var. GLABER Bréb. Formby, Lancs, MASON.
Var. VILLOSUM Lam. Barry, Glamorgan, WADE.

160/5. L. CORNICULATUS L., var. CRASSIFOLIUS Pers., modif. CAESPITOSUS Riene. Silverdale, Lancs, MASON.
Modif. PARVIFLORUS. Shoreham, Sussex; Blackhead, Co. Clare, DRUCE.
Modif. GRANDIFLORUS. Moreton, Cheshire, MASON.

160/6. L. TENUIS W. & K. Milton, S. Hants, L. B. HALL; Giffnock, Lanark, GRIERSON; Waldringfield, Suffolk, Miss BARBARA ALLEN; Turvey, Beds, MASON; Woodhall Spa, N. Lincs, DRUCE.
Var. LONGICAULIS (Martr.-Don.) Druce. Giffnock coup, Renfrew, GRIERSON; Dorrington, Lincs, MASON; Dagenham, Essex, MELVILLE and DRUCE.

160/7. L. HISPIDUS Desf., var. MAJOR Rouy. Near Torquay, Devon, ex Miss LARTER.

†163/1. GALEGA OFFICINALIS L., var. ALBA. Ware, Herts, on mud dredged from the river, DRUCE.

166/3. ASTRAGALUS DANICUS Retz. Near Swindon; between Amesbury and Salisbury, Wilts, Rev. G. GWATKIN and Rev. E. H. GODDARD.

†166/6. A. BOETICUS L. Lockerley, S. Hants, DRUCE and Miss SALMON.

†170/1. CORONILLA VARIA L. Christchurch, S. Hants, L. B. HALL.

†170/3. C. SCORPIOIDES Koch. Burton-on-Trent, Staffs, DRUCE; Isle of Wight, LONG.

†175/1. CICER ARIETINUM L. Avonmouth, W. Gloster, C. & N. SANDWITH.

176/2. VICIA TENUIFOLIA Roth. Seer Green, Beaconsfield, Bucks, 1897, W. NEILSON-JONES.

176/3. V. CRACCA L., var. IMBRICATA Gmel. Letterkenny, Co. Donegal; Lisdoovarna, Co. Clare; Roundstone, Co. Galway, DRUCE. This is the common British plant.

†176/5. V. VILLOSA Roth. Avonmouth, W. Gloster, C. & N. SANDWITH.

? Forma CONSENTINA. Radyr, Glamorgan [30]. SMITH and MELVILLE. Thought to be PSEUDO-CRACCA Bert. by THELLUNG.

†176/7. V. BITHYNICA L. Aberfoyle, Perth, surely a casual, A. MALINS SMITH in *Journ. Bot.* 177, 1928.

176/8. V. SEPIUM L., var. OCHROLEUCA Bast. Near Letterkenny, Co. Donegal, BROWNING.

†176/9. V. LUTEA L., var. CAERULEA Archang. Ware, Herts, DRUCE.

†176/12. V. SATIVA L., var. CORDATA (Wulfen). Clacton, Essex, DRUCE.

Var. OBOVATA (Ser.) Gaud. Swanage, Dorset, Miss TODD; Mellon Charles, W. Ross, DRUCE.

176/13. V. ANGUSTIFOLIA (L.) Reich., var. BOBARTII (Forst.). Hythe Quay, Colchester, Essex [2420], BROWN; Albury, Oxon; Barnack, Northants, DRUCE.

Var. SEGETALIS Koch. Formby, Lancs; Burton-on-Trent, Staffs; Upton, Berks, distributed this year, DRUCE.

Var. RACEMOSA (Beck.). Ware, Herts, DRUCE.

Var. UNCINATA (Desv.). Eastham, Cheshire, MASON.

176/14. V. LATHYROIDES L., var. PARVA Rienc. Blackhead, Co. Clare, DRUCE.

†176/20. V. MONANTHOS Desf. Birkdale, S. Lancs, HOLDER and WAGSTAFFE.

†176/21. V. CALCARATA Desf. Ware, Herts, 1928, DRUCE.

†176/25. V. NARBONENSIS L. Ware, Herts; Burton-on-Trent, Staffs, DRUCE.

†176/27. V. MELANOPS Sibth. & Sm. Ware, Herts, DRUCE.

†176/38. V. PUBESCENS (DC.) Link. Burton-on-Trent, Staffs, DRUCE.

†178/3. LATHYRUS TUBEROSUS L. Ainsdale Dunes, Freshfield, Lancs, the plants appearing among *Salix repens*, F. W. HOLDER.

†178/7. L. HIRSUTUS L. Ware, Herts, DRUCE.

†178/9. L. APHACA L., and as the pale-flowered form, Ware, Herts; Burton-on-Trent, Staffs, DRUCE; Abingdon, Berks, T. G. PARRY.

†178/18. L. Cicera L. Meltersland coup. Lanark, Grierson.

†178/19. L. sativus L. Avonmouth, W. Gloster. C. & N. Sandwith.

183/4. Prunus Cerasus L. Marlborough, Wilts. Mrs Wedgwood; in a hedge, probably planted, Salmonby, N. Lincs, Mason; Glenariff, Antrim, Miss I. M. Roper.

†183/8. P. cerasifera Ehrh. Salmonby, N. Lincs, Druce and Mason.

†184/10. Spiraea salicifolia L. Island on Dee, Aberdeen, Miss Todd.

184/11. S. Ulmaria L., var. denudata Boenn. Melmerby, Cumberland, Mason; Bicester, Oxon; Laghy, Co. Donegal, Druce.

185/45. Rubus Winteri Focke (Godronii). Carrick, Donegal, Druce.

185/66. R. pyramidalis Kalt. Mallaranny, Mayo, Druce.

185/97. R. fuscicortex Sudre. (podophyllus). Slieve Donard, Co. Down, Miss I. M. Roper.

185/127. R. hostilis M. & W. Llandilo, Carmarthen, 1891, H. A. Evans, teste Watson. Named by Rogers as *apricus*.

188/2. Fragaria vesca L., var. muricata L. Sidley, near Bexhill-on-Sea, Sussex, Miss Cole.
Var. bercheriensis Dr. Still in the classic locality near Hurst, Berks, where I found it in 1894, Druce.

†188/3. F. indica Andrews. Weobly, Hereford, Mrs Hall.

189/9. Potentilla erecta × procumbens. Portrush sand-dunes, Antrim, Miss I. M. Roper.

†189/11. P. norvegica L. Near Countess Wear, S. Devon, D'Urban; Churchtown, S. Lancs, F. W. Holder.

†189/18. P. canescens Bess. Dundee, Angus, Druce and Corstorphine.

190/2. Alchemilla pratensis Schmidt. Melmerby, Cumberland; Billinge, Lancs, Mason; Middleton-in-Teesdale, Durham; Crossmolina, Co. Mayo; Cave Hill near Belfast, Co. Antrim, Druce.

190/4. A. minor Huds. Cronkley Fell, Yorks, Druce; Collin Glen, Antrim; Sligo, Miss I. M. Roper.

190/6. A. subcrenata Buser. "Plante embarrassante qui n' a pas d'équivalent exact chez nous. C'est à *A. subcrenata* qu'elle se rapproche le plus." In permanent pasture, Ythan valley, N. Aberdeen, Rev. F. TURREFF. Type on Cave Hill, near Belfast, Co. Antrim, DRUCE.

190/8. A. ALPESTRIS Schmidt. Legbarthwaite, Cumberland; Abbeystead, Lancs, MASON; Cave Hill, near Belfast, Co. Antrim; Anacoona, Co. Sligo, DRUCE; Collin Glen, Antrim, Miss I. M. ROPER.
Forma APRICA. Middleton-in-Teesdale, Durham, DRUCE.

190/11. A. RENIFORMIS Buser. Cave Hill, near Belfast, Co. Antrim, DRUCE.

190/17. A. CRINITA Buser, var. BRITANNICA Jaquet & Druce. Ythan valley, Fyvie, N. Aberdeen, Rev. F. TURREFF, "plante peu normale, probablement var. *britannica* Jaq. & Dr.," JAQUET.

190/19. A. ALPINA L., var. GLOMERATA (Tausch). Morven, Caithness, S. MANSON.

191/2. AGRIMONIA ODORATA Mill. Llanfair P. G., Anglesey, MASON.

194/5. ROSA STYLOSA Desv., var. DESVAUXIANA Ser. Dean station, and Bentley wood, Hants, Mrs WEDGWOOD.

194/6. R. CANINA L., var. NEMOPHILA (Déség. & Ozan.). Shortwood, Northants, DRUCE.
Var. CURTICOLA Puget. Shortwood, Northants, DRUCE.
Var. INSIGNIS Déség. & Rip. Shortwood, Northants; Woodhall, N Lincs, DRUCE.
Var. FLEXIBILIS (Déség.). Beaconsfield, Bucks, Mrs WEDGWOOD.

194/7. R. SQUARROSA Rau, var. VIRIDICATA (Puget). Near Bradland Pond, Northants, DRUCE.
*Var. CARIOTI (Chab.). Cuckoo Nook, Staffs, DRUCE.
Var. SYLVULARUM (Rip.). Frilford, Berks, DRUCE.

194/9. R. BLONDAEANA (Rip.). Near Bradland Pond, Northants, DRUCE.

194/10. R. DUMETORUM Thuill., var. SPINETORUM (Déség. & Ozan.). Shortwood, Northants, DRUCE.
Var. ERECTA W.-D. Shepperton, Middlesex, *Hb. Druce.*

*194/13. R. CAESIA Sm. (CORIIFOLIA). Chopping Knife Lane, Marlborough, Wilts, Mrs WEDGWOOD.

194/15. R. EGLANTERIA L., var. CORSTORPHINAE Dr. Aberfeldy, M. Perth (leaflets 11-12 lines long), J. G. GLASSFORD, ex WOLLEY-DOD, as *rubiginosa* f. *Corstorphinae* W.-Dod.

194/18. R. OBTUSIFOLIA Desv., var. TOMENTELLA (Lem.). Mawsley Wood, Northants, DRUCE.

Var. SCLEROPHYLLA (Scheutz.). Shortwood, Northants, DRUCE.
Var. BORRERI (Woods). Spain Hall, Essex, *Hb. Druce.*

194/20. R. OMISSA Déség. Mawsley Wood, Northants, referred to *R. Sherardi* by Prof. BOULENGER; Swilly, Donegal, BROWNING; Cuckoo Nook, Staffs, DRUCE.

194/23. R. SPINOSISSIMA L., var. ROSEA Koch. Portrush sand-dunes, Antrim, Miss I. M. ROPER, with var. *pimpinellifolia* (L.).

195/1. PYRUS MALUS L., var. PARADISIACA L. Heathfield, E. Sussex, Miss PICKARD.

*195/2. P. COMMUNIS L., var. DESVAUXII R. & C. Salmonby, N. Lincs, MASON.

195/13. P. ARIA Ehrh., var. CYCLOPHYLLA (Beck). Basildon, Berks, Mrs WEDGWOOD.

195/16. P. GERMANICA Hook. The Hon. Mr JUSTICE TALBOT tells me that this was found on the property of Mr Meade Waldo, in Kent. Two more trees were known long ago by the father of Mr Waldo's woodman. The trees are old and scraggy and have the appearance of being wild.

196/1. CRATAEGUS MONOGYNA Jacq., var. SPLENDENS Dr. Mawsley Wood, Northants, in abundance and in great beauty, DRUCE.

196/2. C. OXYACANTHOIDES Thuill. Salmonby, N. Lincs, MASON.

†196/8. C. COCCINEA L. Troy House, Monmouth, C. BAILEY.

†197/2. COTONEASTER MICROPHYLLUS Wallich. On the downs east of Washington, Sussex, E. PAYNE.

†197/3. C. SIMONSII Baker. Edge of heath, Arne, Dorset, Miss CAMPBELL; I saw it in a hedge near Ridge, Dorset, DRUCE.

199/1. SAXIFRAGA AIZOIDES L. Coniston, S. Lancs. MASON.

199/23. S. STELLARIS L., var. FONTANA Dr. Melmerby, Cumberland, MASON.

†199/24. S. UMBROSA L. Alien. Hoy, Orkney, J. SINCLAIR, jun., ex H. H. JOHNSTON; Glenariff. Antrim, Miss I. M. ROPER (? planted).

†202/1. LEPTAXIS MENZIESII Rafin. Near Southport, Lancs. F. W. HOLDER.

205/1. PARNASSIA PALUSTRIS L., var. CONDENSATA Tr. & Wh. Rosses Point, Sligo, Miss I. M. ROPER.

†207/3. Ribes rubrum L., var. sativum (Reichb.). Marlborough, Wilts; Beaconsfield, Bucks, Mrs Wedgwood.

207/5. R. alpinum L. Winstanley, Lancs; Mablethorpe, Lincs, Mason.

210/1. Cotyledon Umbilicus-Veneris L., var. bracteata Dr. Henfield, Sussex, Miss Cottes; Glengariff, Co. Cork, Druce.

†211/2. Sedum rupestre L. Waste ground, river side, Selkirk, Druce and Miss Hayward.

†211/3. S. reflexum L. Llandysilio, Anglesey. Mason.

†211/7. S. album L. Arnside, Westmorland, Mason.

211/22. S. roseum (L.) Scop. Near the coast level, Husinish, and on rocks in Ulladale, N. Harris; Ben Bulben, Co. Sligo, Druce.

213/1. Drosera anglica Huds. Common in Harris, Druce.
× rotundifolia = obovata M. & K. Loch Langavat, Amhuinnsuidh, N. Harris, Druce.

213/2. D. longifolia L. Small plants with relatively broader leaves, Kenfig, Glamorgan, Miss Vachell.

215/1. Gunnera chilensis Lam. Killery Bay, Mayo, seeding freely, Druce.

217/1. Callitriche stagnalis Scop., var. serpyllifolia (Kuetz.). Sands of Luce, Wigtown, 1883, C. Bailey.

217/5. C. intermedia Hoffm. Rodil, S. Harris, Druce.
Var. pedunculata (DC.) Dr. Gurnard's Head, Cornwall, C. Welfitt-Nicholls.

217/6. C. autumnalis L. Lochmaddy, N. Uist, Hon. Mrs G. Baring.

220/7. Epilobium obscurum × tetragonum. Legbaerthwaite, Cumberland, Mason. Det. J. Fraser.

220/7. E. obscurum × parviflorum. Overstrand, Norfolk, Mason.

220/8. E. roseum Schreber. Outskirts of Sligo, Druce.

220/9. E. lanceolatum S. & M. Chichester gravel pits, 1927, Druce.

220/10. E. montanum × parviflorum = limosum Schur. Goods Station, Bristol, W. Gloster, Druce; Limestone Dale, Derby, A. R. S. Proctor.

×OBSCURUM = AGGREGATUM Celak. Harewood Forest. N. Hants. RAYNER.

†220/15. E. NUMMULARIFOLIUM R. Cunn. Clapham, Yorks, FRANKLAND and HOLDER.

†224/1. FUCHSIA RICCARTONI Hort. Near Lady's Island Lake, Co. Wexford, DRUCE.

*225/3. CIRCAEA ALPINA L. By the river Towey, 7 or 8 miles north of Llandovery, Carmarthen, Miss DIANA CATOR and Sir GEORGE TALBOT, a great extension of its known ranges.

†234/1. CARPOBROTUS (MESEMBRYANTHEMUM) EDULIS (L.) N. E. Br. Cliffs near Dartmouth, Devon, DRUCE.

†239/1. ERYNGIUM CAMPESTRE L. About a dozen plants in a rough sandy field of grass, thistles and ragwort, near Guildford, Surrey, F. CLARKE. Probably adventive.

†245/6. BUPLEURUM LANCIFOLIUM Hornem. In great quantity but varying much in size, Burton-on-Trent, Staffs. DRUCE and Sir R. CURTIS.

†250/1. CARUM CARVI L. Shingle, Shoreham, Sussex; Boston, Lincs, DRUCE; Parkstone, Dorset, L. B. HALL.

250/2. C. VERTICILLATUM L. In beautiful growth at Ridge, Dorset, DRUCE.

†252/1. PRIONITIS FALCARIA (L.) Dum. Arable field a few miles from Stratford-on-Avon, Warwick, J. LAMB.

261/1. CHAEREFOLIUM SYLVESTRE (L.) S. & T., var. LATISECTUM Dr. Cavenham, W. Norfolk, DRUCE.
Var. ANGUSTISECTUM Dr. Laghy, Co. Donegal; near Londonderry, DRUCE; Strand Hill, Co. Sligo, Miss I. M. ROPER; Charmouth, Dorset, but an abnormal form. Miss TODD.

264/6. CRITHMUM MARITIMUM L. Cliffs near Blackhead, Co. Clare, DRUCE.

265/3. OENANTHE CROCATA L., var. TENUIFOLIOLATA Dr. Hatherleigh, Devon, MASON.

265/6. OE. LACHENALII Gmel., var. MINIMA Rouy & Camus. Border of Lady's Island Lake, Co. Wexford, DRUCE.

274/1. ANGELICA SYLVESTRIS L., var. DECURRENS Lallem. Anacoona, Co. Sligo; Carrick, Co. Donegal. DRUCE.

†277/1. HERACLEUM MANTEGAZZIANUM S. & L. Near Barton Mills, E. Norfolk, H. PHILLIPS; roadside near Corbridge-on-Tyne, Northum-

berland, G. V. TEMPERLEY, ex R. B. COOKE; near the Saltersford (reservoir for Grantham), Lincs, known for some years, Miss S. CATHERINE STOW, who thought it was intermediate between *Sphondylium* but it appears to come under *Mantegazzianum*.

282/1. DAUCUS CAROTA L. As a small purple-flowered form, Husinish, N. Harris, DRUCE.

†283/2. CAUCALIS DAUCOIDES L. Burton-on-Trent, Staffs, DRUCE.

*283/5. C. NODOSA Scop. Brynich, Brecon, WADE.

284/1. HEDERA HELIX L., var. BOREALIS Dr. Near Witley, Surrey, DRUCE; Salmonby, N. Lincs, DRUCE and MASON.
Var. SARNIENSIS Dr. Lidstep, Pembroke, Miss TODD.

†287/1. SAMBUCUS RACEMOSA L. Near High Force, Durham, DRUCE and Mrs BUCKLER; Ballater, S. Aberdeen, Miss TODD.

288/1. VIBURNUM OPULUS L. Glen Nant, Argyll, J. A. WEBB, and thought by him to be native.

288/2. V. LANTANA L., var. VIRIDE Kern. Marlborough, Wilts, Mrs WEDGWOOD.

†289/2. SYMPHORICARPOS SYMPHORICARPOS (L.). Firth, Mainland, Orkney, H. H. JOHNSTON.

†291/1. LONICERA CAPRIFOLIUM L. Middle of wood near Ledbury, Hereford, F. M. DAY.

†291/5. L. XYLOSTEUM L. Howick, Northumberland, Miss TODD.

296/3. GALIUM ERECTUM Huds. Stiffkey, E. Norfolk, E. M. REYNOLDS.

296/7. G. PALUSTRE L., var. WITHERINGII (Sm.). East Budleigh, S. Devon, Major R. ORME.

296/8. G. DEBILE Desv. = G. CONSTRICTUM Chaub. New Forest, S. Hants, HORWOOD.

†296/10. G. TRICORNE Stokes. Splott, Glamorgan; Burton-on-Trent, Staffs, DRUCE.

296/13. G. ANGLICUM Huds. Railway bank, Snodland, Kent, Miss BACON and Major ORME.

304/1. VALERIANELLA OLITORIA Poll. Sea sand at Nisishee, S. Harris, and Derrynane, Co. Kerry, DRUCE.

†304/2. V. ERIOCARPA Desv. In garden ground, Great Malvern, Worcester, W. W. BOUCHER.

304/4. V. CARINATA Lois. Near Bishopsleighton, S. Devon, WATERFALL.

304/5. V. RIMOSA Bast. Par, Cornwall, MEDLIN.

308/1. SCABIOSA COLUMBARIA L. Melmerby, Cumberland, MASON.

308/4. S. SUCCISA L. Hen and Chicken form, Cave Hill, Antrim, Miss I. M. ROPER.

308/5. S. ARVENSIS L. Newton Hill, Wick, Caithness, S. MANSON.

312/1. SOLIDAGO VIRGAUREA L., var. LANCEOLATA Druce. Banchory, Kincardine, 1927; Tarbert, N. Harris, 1928, approaching sub-var. ACUTIFOLIA but may perhaps belong to *Plukenetiana*, DRUCE.

Var. INTERRUPTA Druce. Erwood, Radnor, LEY; Custerton, Westmorland, H. E. Fox in *Hb. Druce*.

Var. ANGUSTIFOLIA Koch. Morley's Bridge, Co. Kerry, August 1928, DRUCE.

Var. PLUKENETIANA Druce. Robust plants from Silda Wick, Isle of Fetla, August 1928, [Ref. No. 264], H. H. JOHNSTON. One large specimen approaches the sub-var. *acutifolia* Dr. Some large specimens of *Plukenetiana* from Tarbert and Ulladale, N. Harris, approach *acutifolia* as also do some from Teesdale, DRUCE. It will be found probably that *Plukenetiana* is a good sub-species. It covers most of the Scottish so-called *cambrica*.

†312/3. S. LANCEOLATA L. Near Axminster, Devon, Sir MAURICE ABBOT-ANDERSON.

314/1. BELLIS PERENNIS L. Sent as the Hen and Chicken variety from Reay, Caithness, by G. SUTHERLAND: a discoid form, Braunstone, Leicester, O. V. BEMROSE.

†318/1. ASTER SALIGNUS Willd. Yarnton, Oxon, 1927, DRUCE. Det. THELLUNG.

†318/4. A. NOVI-BELGII L. Drayton, Middlesex, DRUCE. Det. J. FRASER.

†318/6. A. LANCEOLATUS Willd. Yarnton, Oxon, August 1927, teste THELLUNG. See *Rep. B.E.C.*, 574, 1927, where it was queried *longifolius*, DRUCE.

†318/13. A. NOVAE-ANGLIAE L. Ardchattan, Argyll, J. A. WEBB.

318/19. A. TRIPOLIUM L. Oyce, Firth, Orkney, H. H. JOHNSTON. This is the var. *glaber* Bolzon. as are specimens from Woodbridge, W. Suffolk, MASON.

328/1. GNAPHALIUM ULIGINOSUM L., var. PSEUDO-PILULARE Scholz. Near Christchurch, S. Hants, L. B. HALL.

328/3. G. SYLVATICUM L. Near Louth, S. Lincs, Miss D. MARSDEN.

†351/1. GUIZOTIA ABYSSINICA Cass. Bassett, Hants, RAYNER.

352/2. COREOPSIS TINCTORIA Nuttall. Avonmouth, W. Gloster, C. & N. SANDWITH.

†353/6. BIDENS FRONDOSA L. Bristol, W. Gloster, C. SANDWITH.

†354/1. GALINSOGA PARVIFLORA Cav. Radlett garden, W. Herts, Rev. E. C. CRUTWELL.

†356/1. HEMIZONIA PUNGENS T. & G. Burton-on-Trent, Staffs, J. W. LONG.

†364/1. ANACYCLUS CLAVATUS Pers. Burton-on-Trent, Staffs, DRUCE; Par, Cornwall, MEDLIN.

†364/2. A. RADIATUS Lois. Dagenham, S. Essex, MELVILLE; Par, Cornwall, MEDLIN.

†364/3. A. VALENTINUS L. Type, Burton-on-Trent, Staffs, 1927; Barry, Glamorgan, DRUCE.

†364/4. A. DISSIMILIS Pomel. Splott, Glamorgan; Burton-on-Trent, Staffs, DRUCE.

365/1. ACHILLEA MILLEFOLIUM L., var. CONSPICUA Dr. Letterkenny, Carrick, Co. Donegal, DRUCE.

†365/15. A. TOMENTOSA L. Weston, Southampton, RAYNER.

367/1. DIOTIS MARITIMA Cass. Still existing in considerable quantity near Lady's Island Lake, Co. Wexford, DRUCE.

†368/1. ANTHEMIS TINCTORIA L. Bangor, Carnarvon, MASON.

368/2. A. NOBILIS L., var. FLORE PLENO. Near Bolt Head, Devon, F. M. DAY. This is the "camomile" of pharmacy.

†370/5. CHRYSANTHEMUM LACUSTRE Brot. Shingle beach, Kingsdown, Kent, 1921, H. E. FOX in *Hb. Druce*.

†370/13. C. PARTHENIUM (L.) Bernh., var. FLOSCULOSUM DC. Norwich, Norfolk, H. L. GREEN.

†370/17. C. CORONARIUM L. Marston, Oxon; Burton-on-Trent, Staffs, DRUCE; Maryborough, near Glasgow, Lanark, GRIERSON.

371/1. MATRICARIA INODORA L., f. DISCOIDEA. Boston Docks, N. Lincs, in some quantity, but merging into the type, with which it grew, DRUCE.

Var. PHAEOCEPHALA Rupr., sub-var. FLORE PLENO. Old Wick, Caithness. J. SUTHERLAND.

†371/3. M. SUAVEOLENS (Pursh) Buch. Near Bromsgrove, Worcester; Bicester, Oxon, Miss WILKINSON; Carnsore Point, Co. Wexford, DRUCE.

†371/5. M. DECIPIENS C. Koch. Burton-on-Trent, Staffs, DRUCE.

378/3. ARTEMISIA VULGARIS L., var. COARCTATA Fors. Sand-dunes, Husinish, N. Harris, DRUCE; Felin Fingan, Anglesey, MASON.

†378/15. A. ANNUA L. Yiewsley, Middlesex, MELVILLE.

†378/16. A. BIENNIS Willd. Colchester, Essex, G. C. BROWN, teste Dr PROBST.

†378/18. A. LUDOVICIANA Nutt., var. GNAPHALODES (Nutt.). Avonmouth Docks, W. Gloster, H. J. GIBBONS.

383/3. SENECIO AQUATICUS Hill, var. INTERMEDIUS Dr. Shefford, Berks, DRUCE.

× JACOBAEA. Shefford, Berks, DRUCE.

383/4. S. ERRATICUS Bert. Brocklehurst, S. Hants, probably this, but too young [N.211], L. B. HALL.

383/5. S. JACOBAEUS L., var. DISCOIDEUS L. Rosses Point, Sligo, Miss I. M. ROPER; Moher, Clare, DRUCE.

†383/7. S. SQUALIDUS L. Thorpe Pit, Staines Lane, Surrey, with exceptionally large ligules, Lady DAVY, teste THELLUNG. A form with simple but deeply serrated leaves at Splott, Glamorgan, DRUCE.

× VULGARIS. Northwich, Cheshire, HODGE.

383/32. S. INTEGRIFOLIUS (L.) Clairv., var. VULGARIS DC. Meadow near Kirkby Stephen, Westmorland, ex Lady DAVY.

†385/1. CALENDULA OFFICINALIS L. Naturalised on cliffs near Sheringham, E. Norfolk, F. A. SOWTER; Didcot, Berks; Burton-on-Trent, Staffs, DRUCE.

†387/1. GAZANIA SPLENDENS Lam. St Aubin's, Jersey, ARSENE.

393/1. ARCTIUM LAPPA L. (MAJUS). Hydnall Wood, N. Lincs, DRUCE.

†395/3. CARDUUS TENUIFLORUS Curt. Burton-on-Trent, Staffs, DRUCE and CURTIS.

396/3. CIRSIUM HETEROPHYLLUM (L.) Hill, var. LACINIOSUM Nörrl. Glen Dole, Forfar, Miss TODD.

396/8. C. ARVENSE Scop., var. MITE Koch. Wool, Dorset, L. B. HALL.

†399/1. MARIANA MARIANA Hill. Halton Holgate, N. Lincs, MASON; Burton-on-Trent, Staffs, DRUCE.

†405/7. CENTAUREA PRATENSIS Thuill. Crafty, Firth, Orkney, H. H. JOHNSTON.

405/8. C. OBSCURA Jord. Roughty River, Co. Kerry; Cave Hill, Co. Antrim; with the intermediate form of this and *nemoralis*, Banchory, Kincardine, DRUCE.

405/11. C. NEMORALIS Jord. Old, Northants; Carrick, Co. Donegal; Culeaze, Dorset (with *radicata*), DRUCE; Meols, Cheshire; Salmonby, N. Lincs, MASON.

†405/19. C. MONTANA L., forma. Waste ground, Dundee, Angus, DRUCE and CORSTORPHINE.

†405/31. C. SOLSTITIALIS L. Finstown, Orkney, H. H. JOHNSTON.

†405/32. C. MELITENSIS L. Burton-on-Trent, Staffs, DRUCE.

†406/1. CNICUS BENEDICTUS L. County waste dump, Herts, H. PHILLIPS.

†407/3. CARTHAMUS TINCTORIUS L. Bristol, N. Somerset, C. SANDWITH; Christchurch, S. Hants, L. B. HALL; common on ballast, Hillside, S. Lancs, HOLDER and WAGSTAFFE.

†408/1. SCOLYMUS HISPANICUS L. Near Nelson, Lancs, A. TURNER.

†415/5. PICRIS SPRENGERIANA Poir. Bristol, W. Gloster, for a second year, C. SANDWITH.

416/1. CREPIS MOLLIS Asch. Near Pitchroy, Banff, Lady ELPHINSTONE.

416/3. C. BIENNIS L. By moorland road near Budleigh Salterton, Devon, Major ORME.

†416/4. C. NICAEENSIS Balb. Burton Agnes, near Duffield, E. Riding, Yorks, Major LAWSON, ex R. J. FLINTOFF.

416/5. C. CAPILLARIS Wallr. Merton, Oxon, teste Dr THELLUNG; Crab Wood, S. Hants; Barry, Glamorgan, DRUCE. The continental type is rare in Britain.

Var. ANGLICA Dr. & Thell. Dagenham, Essex; Hackney, Middlesex; Didcot, Berks; Barry, Glamorgan; Perth; Cave Hill, Co.

Antrim; small form near Loch Laxadale, N. Harris, Druce; near Witton, Lancs, Miss Ackerley; Banchory, Kincardine, a large-flowered, robust specimen, perhaps a distinct form, 1927, Druce; Corfe Castle, Dorset, (sub-var. griseola Thell.); West Kirby, Cheshire, Mason.

†416/11. C. setosa Haller f. Walmer, Kent, R. G. Gwatkin.

419/1. Hieracium Pilosella L., var. subvirescens (N. P.). By the railway, on a chalk bank, near Upton, Berks, the second British locality, Druce. Specimens are now distributed. Dr Zahn has kindly identified it.

419/62. H. praecox Sch.-Bip., var. castanetorum Sch.-Bip. Handcross, Sussex, Lady Davy.

419/187. H. Pulmonarioides Vill. Churchtown Station, Lancs, F. W. Holder.

419/241. H. umbellatum L. Specimen four feet high, near Letterkenny, Co. Donegal, Browning.

422/2. Leontodon autumnalis L., var. sordida Bab. Chatteris, Cambridge; Balta, Zetland; Frilford, Berks; Dunvegan, Skye; Tarbert, Harris, Druce.

423/1. Taraxacum brachyglossum Dahlst. Aldbourne, Wilts, Miss Todd; Derby, Proctor; Abingdon, Berks, Druce.

423/6. T. lacistophyllum Dahlst. Salmonby, Lincs, Mason; Albury, Herts; Purley, Berks, Druce.

423/7. T. laetum Dahlst. A related form, Frilford, Berks, Druce.

423/26. T. maculigerum Lindb. f. Glen Doll, Angus, Miss Todd; Marlborough, Wilts, a modification, Mrs Wedgwood.

423/31. T. praestans Lindb. f. Related form. The Parks, Oxford, Druce.

423/39. T. amblycentrum Dahlst. The Parks, Oxford; an allied form, Abingdon, Berks, Druce.

423/51. T. Dahlstedtii Lindb. f. Frilford, Berks, Druce.

423/82. T. privum Dahlst., forma. Kingston Garage, Berks, Druce.

423/85. T. sublaciniosum Dahlst. Very nearly allied form, Shipton, Oxon, Druce.

†425/2. Lactuca Serriola L. Abundant at West Drayton, Middlesex, Druce.

†425/3. L. SALIGNA L. Avonmouth, W. Gloster, C. & N. SANDWITH.

427/3. SONCHUS ASPER Hill, var. INTEGRIFOLIUS Lej. Burton-on-Trent, Staffs; Guildford, Surrey; Salmonby, N. Lincs, DRUCE.

427/4. S. OLERACEUS L., var. ALBESCENS Neum. Near Wadebridge, Cornwall, AMHERST.

Var. CILIATUS (Lam.) Dr. Wymondley, Herts, H. PHILLIPS; Salmonby, Lincs; Matlock, Derby, DRUCE.

†428/1. TRAGOPOGON PORRIFOLIUS L. Lodmore, Dorset, Hon. Mrs V. ADEANE.

432/1. JASIONE MONTANA L., var. LATIFOLIA Pugs. Skomer Island, Pembroke, WADE.

435/5. CAMPANULA ROTUNDIFOLIA L., var. SPECIOSA More. Lisdoovarna, Co. Clare, DRUCE.

*438/2. VACCINIUM INTERMEDIUM Ruthe. Near a small lake not far from Llanfachreth, Dolgelley, Merioneth, Miss E. VACHELL. New to Wales. Near Oxstones on the Hallam Moors, Derby, and on the Midhope Moors, Yorks, GOURLAY.

†442/1. PERNETTYA MUCRONATA Gaud. Site of an old nursery, with *Kalmia angustifolia* L., near Bumper Castle, Derby, DRUCE; by Loch Swilly, Co. Donegal, BROWNING.

†443/1. GAULTHERIA SHALLON Pursh. In some quantity, having spread from a nursery, on the moors near Bumper Castle, Derby, DRUCE and Sir R. CURTIS; Brockenhurst, S. Hants, L. B. HALL.

446/1. ERICA CINEREA L., var. SPLENDENS (Vigurs) Dr. Cashel, Galway, DRUCE.

446/2. E. TETRALIX L., var. FISSA Dr. Hinton Admiral, Studland Heath, Christchurch, S. Hants, L. B. HALL; near Langavat, Harris, DRUCE.

†446/6. E. TERMINALIS Salisb. Seeding on Holly Isle, Glengariff, Co. Cork, DRUCE.

*446/7. E. VAGANS L. Darley Dale, Derby, merely part of a nursery on the moors, DRUCE; planted on stony hill west of Swilly, Donegal, BROWNING.

446/8. E. MEDITERRANEA L., var. HIBERNICA Hook. & Arn. As a small plant 12 inches high, near Mallaranny, Co. Mayo, DRUCE.

†452/1. RHODODENDRON PONTICUM L. Moor above Harker Hill, Derby, seedling specimens, September 1928, DRUCE and Sir R. CURTIS.

452/1(2). R. FERRUGINEUM L. Old nursery near Bumper Castle, Derby, DRUCE.

*453/1. PYROLA ROTUNDIFOLIA L. Bagley Wood, Oxford, M. GREENING, ex Dr J. BURTT-DAVY. Possibly introduced. It is a small patch only. It is not near the planted Conifers but under oaks now cleared. It is so far away from its habitat in Norfolk and Kent that I hesitate to claim it native. The wood has been so much botanised over for centuries that it is hardly likely to have escaped unnoticed. DRUCE.

456/1. HYPOPITYS HYPOPITYS (L.) Dr. Whitbarrow, Westmorland, MASON.

458/2. STATICE PUBESCENS (Sm.) Dr. Husinish, N. Harris; Callinish, Lewis, Outer Hebrides; Carnsore Point, Co. Wexford; Achill Isle, Co. Mayo, DRUCE.

460/3. PRIMULA VERIS L., var. RUBRA. Melmerby, Cumberland, MASON.

× VULGARIS. Winkfield, Berks, ex G. V. BEMROSE.

463/2. LYSIMACHIA VULGARIS L., var. MACULATA Dr. East Stoke, Dorset, L. B. HALL.

†463/3. L. PUNCTATA L. Crathes, Kincardine, Miss TODD.

†464/1. STEIRONEMA CILIATUM Raf. Golspie, E. Sutherland, Mrs GRIFFITHS; near Moffat, Dumfries, T. A. DYMES.

467/1. ANAGALLIS TENELLA Murr. Husinish, Loch Langavat, N. Harris; Nisishee, S. Harris, DRUCE.

†474/2. BUDDLEIA VARIABILIS Lindl. Swaythling, S. Hants, RAYNER.

478/1. CENTAURIUM CENTAURIUM (L.) Dr., var. ELLIPTICUM Dr. Methop, Westmorland, MASON.

Var. CAPITATUM (Koch) Dr. Achill Isle, Co. Mayo; Lady's Island, Lake Wexford, DRUCE; Rosses Point, Co. Sligo, Miss I. M. ROPER.

480/1. GENTIANA PNEUMONANTHE L. Near Formby, S. Lancs, but rapidly decreasing, HOLDER and WAGSTAFFE

480/6. G. PRAECOX Towns. St Boniface Down, Isle of Wight, April 1928, E. G. WATERS; Dorset, MASON.

480/9. G. CAMPESTRIS L., var. BALTICA (Murb.). Tarbert, Harris; Roundstone, Galway, DRUCE

†*482/1. NYMPHOIDES NYMPHOIDES (L.). Groby Pool, Leicester, H. W. CLEAR. Mr Bemrose says that, so far as can be ascertained, it has not been introduced during the last 80 years.

†485/2. GILIA CAPITATA Sims. Barry, Glamorgan, DRUCE.

†487/1. NEMOPHILA INSIGNIS Benth. Sandy, Beds, Hon. S. PEEL.

†488/4. PHACELIA TANACETIFOLIA Benth. Burton-on-Trent, Staffs, Sir R. CURTIS.

†490/1. OMPHALODES LINIFOLIA Moench. Garden weed, Basingstoke, N. Hants, WM. HORWOOD.

†493/2. LAPPULA LAPPULA (L.). Newport, Isle of Wight, LONG.

†494/1. ASPERUGO PROCUMBENS L. Burton-on-Trent, Staffs, DRUCE.

†496/2. BENTHAMIA LYCOPSIOIDES Lehm. Falconhurst, Kent, Sir G. TALBOT.

†497/4. SYMPHYTUM PEREGRINUM Ledeb. Holywell, Flint; Arnside, Westmorland, MASON.

504/1. ALKANNA LUTEA A. DC. Burton-on-Trent, Staffs, DRUCE. Det. J. FRASER.

505/1. PNEUMARIA MARITIMA Hill. Giant's Causeway, Antrim, Miss I. M. ROPER.

506/2. MYOSOTIS BREVIFOLIA C. E. S. This was found by the Rev. W. W. MASON in May 1920, at Melmerby, Cumberland.

506/3. M. REPENS G. & D. Don. Banchory, Kincardine, DRUCE.

506/4. M. CAESPITOSA K. F. Schultz. Culeaze, Dorset, DRUCE.

506/7. M. SYLVATICA Hoffm. Wood at Kenwick, S. Lincs, Miss D. MARSDEN.

509/1. ECHIUM VULGARE L., with flowers wholly pink. Lulworth, Dorset, L. B. HALL.

†509/5. E. ITALICUM L., var. PYRAMIDALE (Lap.). Burton-on-Trent, Staffs, DRUCE.

†513/3. CONVOLVULUS TRICOLOR L. Burton-on-Trent, Staffs, DRUCE.

†515/1. CUSCUTA EPILINUM L. Melmerby, Cumberland, 1918, MASON.

†515/7. C. SUAVEOLENS Ser. On Beet, Upwood, Barnt Green, Birmingham, Miss MARTHA GIBBONS.

517/1. SOLANUM DULCAMARA L., var. VILLOSISSIMUM Desv. Marlborough, Wilts, Mrs WEDGWOOD.

†517/14. S. SISYMBRIIFOLIUM Lam. Avonmouth, W. Gloster, SANDWITH and GIBBONS.

†518/4. PHYSALIS PUBESCENS L. Yiewsley, Middlesex, MELVILLE, teste Dr PROBST.

521/1. ATROPA BELLADONNA L. Leverton, Lincs, MASON.

†527/4. VERBASCUM VIRGATUM Stokes, with 527/18. V. PHOENICEUM L. Avonmouth, W. Gloster, C. & N. SANDWITH.

†527/5. V. BLATTARIA L. Splott, Cardiff, Glamorgan, Mrs KNOWLING and Miss VACHELL.

†527/7. V. LYCHNITIS L. Dundee, Angus, DRUCE and CORSTORPHINE.

527/8. V. NIGRUM L. Workington, Cumberland, VARTY SMITH; Dundee, Angus, DRUCE and CORSTORPHINE.

532/3. LINARIA REPENS Mill. On cinder refuse, Derwent Tin Plate Works, Workington, Cumberland, R. H. WILLIAMSON; Avonmouth, W. Gloster, SANDWITH and GIBBONS; Corfe, Dorset, L. B. HALL.
×L. LINARIA. Railway embankment, Rhosferry, Brecon, WADE.

532/7. L. MINOR Desf. Kents Bank, Lancs, MASON.

†532/15. L. BIPARTITA Willd. As a garden variant, Eton, Bucks, Hon. Mrs LYTTLETON.

535/3. SCROPHULARIA ALATA Gilib. Bosworth Pool, Leicester, BEMROSE.

535/4. SCROPHULARIA NODOSA L., var. BRACTEATA Dr. Portrush sand-dunes, Co. Antrim, Miss I. M. Roper.

†537/1. MIMULUS GUTTATUS DC. Bincombe in Cutcombe, Somerset, AMHERST.

†537/2. M. MOSCHATUS Dougl. Lytchett Minster, Dorset, L. B. HALL.

†542/1. ERINUS ALPINUS L. Chepstow, Monmouth, H. A. HYDE.

543/4. VERONICA CHAMAEDRYS L., var. LAMIIFOLIA (Hayne) Beck. Cave Hill, Co. Antrim; Killery Bay, Co. Mayo; near Roundstone, Co. Galway; Glendalough, Co. Wicklow, DRUCE.

543/8. V. ANAGALLIS-AQUATICA L. Meols, Cheshire, MASON.
Var. DIVARICATA (Kroesche). Peat Moor, N. Somerset, Col. WATTS.

543/9. V. AQUATICA Bernh. Sans Marez, Jersey, J. PIQUET; Folkestone, W. Kent; Pyrford, Surrey, Lady DAVY; Odiham, N. Hants; Claverdon, Warwick, Miss C. E. PALMER; Welcher Dam, Cambridge, FRYER; North Stoke, Sussex; Cothill, Hinksey, Berks; Swainthorpe, E. Norfolk; Snove Hall, W. Norfolk; Port Meadow, Oxon; Chalvey, Bucks; Ramsey, Hunts; Bradland Pond, Northants; Langton Lees, Berwick; near Edinburgh, Midlothian, DRUCE.

543/12. V. HUMIFUSA Dicks. Cronkley Fell, Yorks, DRUCE.

543/18. V. TOURNEFORTII Gmel., var. ASCHERSONIANA (Lehm.). Folkestone, W. Kent, LOYDELL; Alton, Hants, VAUGHAN; near Colmworth, Hunts, FRYER; Fleam Dyke, Cambridge; near Eden Hall, Cumberland; Kingsdown, Kent; Buncrana, Co. Donegal, H. E. Fox; Port Patrick, Wigtown; Stonehaven, Kincardine; Clydach, Brecon, BAILEY; Besilsleigh, Berks, Miss WALKER; Carnsore Point, Co. Wexford, DRUCE.

Var. CORRENSIANA (Lehm.). Odiham, N. Hants, Miss C. E. PALMER, as *polita*; Hayes, Middlesex, LOYDELL; Rough Firth, Kirkcudbright, BAILEY; Burntisland, Fife, BELL; Balta, Zetland; Penley Wood, Bucks; Cransley, Northants; Burton-on-Trent, Staffs; Salmonby, N. Lincs; Tarbert, N. Harris, DRUCE.

Forms with the corolla of *Correnslana* but with uniserrate leaves from Beaconsfield, Bucks, Mrs WEDGWOOD; Ford Bridge, Gloster, Lady DOVIE; Albury, Herts; Ivinghoe, Bucks; Henley, Oxon, DRUCE. This may require a name.

Var. KOCHIANA Godr. Greenham, Berks; Bletchingdon, Stonesfield, Oxon, DRUCE.

543/19. V. AGRESTIS L., var. GARKIANA Fourn. East Acton, Middlesex, LOYDELL; St Saviour's, Jersey; Hillbrook, Suffolk; Flowerdale, W. Ross; Cashel, Galway, DRUCE.

Var. VERSICOLOR Mathieu. Banbury, Oxon; Drummore, Wigtown; Ullapool, W. Ross; Kirbister, Orkney; Bressay, Zetland; Cashel, Galway, DRUCE.

543/20. V. DIDYMA Ten. = V. POLITA Fries, var. THELLUNGIANA (Lehm.). Totland, Isle of Wight, STRATTON; Odiham, N. Hants; Lighthorne, Warwick, Miss C. E. PALMER; Shotover, Oxon; Welwyn, Herts, BLAKE; Edworth, Beds, LITTLE; Kilsby, Northants, CUMMING; Shirley, Derby, W. R. LINTON, as *grandiflora*; Butterby, Durham, H. E. Fox; Bellvue House, Orkney [2884], JOHNSTON; St Helier, Jersey, DRUCE.

(The Euphrasiae have been determined by Mr D. Lumb to whom we are greatly indebted.)

545/1. EUPHRASIA STRICTA Host. Mallaranny, Co. Mayo, DRUCE. It has the characteristic long narrow capsule.

545/2. E. BOREALIS Wettst. Rodil, N. Harris (very luxuriant and beautiful); Callinish, Lewis, Outer Hebrides; Derrynane, Co. Kerry (with untypical capsules); Ben Bulben, Co. Sligo, DRUCE.

545/3. E. BREVIPILA B. & G. Husinish, Borve (very luxuriant specimens); Tarbert, Harris; Derrynane, Co. Kerry; Blarney, Co. Cork;

Roundstone, Co. Galway; Keel, Mallaranny, Co. Mayo; Achill Island and Sound (small pretty specimens); Ballina, Anacoona, Co. Sligo; Lady's Island, Co. Wexford; Cashel, Co. Galway; Glen Car, Co. Leitrim; Glendalough, Co. Wicklow; Cave Hill, Belfast; Letterkenny, Londonderry; Carrick, Donegal; Cuckoo's Nest, Stafford, DRUCE; Fyvie, N. Aberdeen, Rev. F. TURREFF.

Var. SUBEGLANDULOSA Towns. Husinish, Harris; Roundstone, Galway, DRUCE.

545/5. E. NEMOROSA Pers., var. CILIATA Drabble. Shoreham Shingle, Sussex, DRUCE.

545/9. E. CURTA Wettst., var. GLABRESCENS Wettst. Shoreham Shingle, Sussex; Lady's Island, Co. Wexford; Glen Cahir, Co. Clare, DRUCE.

545/12. E. LATIFOLIA Pursh. Rodil, S. Harris, DRUCE.

545/15. E. MICRANTHA Fr. Tarbert, Harris, also specimens with *scotica*-like capsules, DRUCE.

545/16. E. SCOTICA Wetts. Langavat, Ulladale (short specimens), Husinish, Amhuinnsuidh, Harris; Callinish, Lewis, Outer Hebrides. DRUCE.

545/19. E. ROSTKOVIANA Hayne. Snowdon, Carnarvon, D. WYNNE in *Hb. Dubois*, circa 1680.

545/21. E. KERNERI Wettst. Down near Blore, Staffs; Bradland Pond, Northants; Roundstone, Galway (untypical); Achill, Co. Mayo; Langavat, Harris, DRUCE; Rosses Point, Co. Sligo, Miss I. M. ROPER.

545/22. E. SALISBURGENSIS Funck. Anacoona, Co. Sligo; Glen Car, Leitrim; Glen Cahir, Co. Clare, DRUCE.

546/3. BARTSIA ODONTITES Huds., var. LITTORALIS (Reichb.). Amhuinnsuidh, N. Harris, DRUCE.

548/5. RHINANTHUS STENOPHYLLUS Schur. Achill Sound, Co. Mayo; Husinish, N. Harris, DRUCE.

548/6. R. MONTICOLA (Stern.) Dr. Husinish, N. Harris, DRUCE.

549/3. MELAMPYRUM PRATENSE L., var. HIANS Dr., sub-var. HIBERNICUM Dr. Near Glenties, Co. Donegal, DRUCE.

550/10. OROBANCHE MINOR Sm. On *Lotus corniculatus* at Weston-super-Mare, Somerset, Miss CLARIDGE.

†551/2. LATHRAEA CLANDESTINA L. Noticed for the last seven to ten years in Sir Arthur Dorman's woods at Grey Towers, Nunthorpe,

Yorks, covering a large area of some 150-200 square yards. Reported to me by MARMADUKE ODLING. Mr Huiston kindly sent specimens. Here it is possibly introduced with foreign trees, but precise information is lacking.

552/3. UTRICULARIA INTERMEDIA Dreves & Hayne. Near Moyard, Galway, luxuriant specimens, growing in deep water, DRUCE.

*552/5. U. MINOR L. Pant-y-Llyn, Brecon, WADE.

553/4. PINGUICULA LUSITANICA L. Loch Langavat, N. Harris, DRUCE.

558/1. MENTHA ROTUNDIFOLIA Huds. Sidmouth, S. Devon; Dalton, Yorks, *Hb. Mason.*

†558/2. M. ALOPECUROIDES Hull. Swaby, Lincs, MASON.

558/3. M. LONGIFOLIA Huds. By the Elie River, Flint, Miss BARBARA ALLEN.
×VILLOSA (Huds.). Derrynane, Co. Kerry, DRUCE.
×NILIACA Jacq., var. NEMOROSA (Willd.). Beeston Regis, Norfolk; Swaby, Lincs, MASON.

†558/4. M. SPICATA (L.). Scarborough, Yorks, J. WHELDON.

558/6. ×M. PIPERITA L. West Runton, Norfolk; Melmerby, Cumberland, MASON.
Var. SUBCORDATA Fraser. Cutcombe, N. Somerset, AMHERST; Sidmouth, S. Devon, MASON.

558/7. M. AQUATICA L., var. MAJOR Sole. Sidmouth, S. Devon; Meols, Cheshire; Melmerby, Cumberland, MASON; Mawsley Wood, Northants, DRUCE.

558/9. M. VERTICILLATA (L.), var. OVALIFOLIA Braun. Sidmouth, S. Devon; Melmerby, Cumberland; Meols, Cheshire, MASON; Derrynane, Co. Kerry; Lough Neagh, Co. Armagh; Carrick, Co. Donegal, DRUCE.
Var. PALUDOSA (Sole). Belstone, Devon, MASON; Bayford, Herts, H. PHILLIPS; Holmwood, Surrey, STAPF.

558/10. M. GENTILIS L. Belstone, Devon, MASON.
Var. VARIEGATA (Sole). Stream, N. Cornwall, Mrs JENNINGS.

558/12. M. RUBRA Huds. Eastern Somers Way, Cutcombe, Somerset, AMHERST; Southport, S. Lancs, HOLDER; near Fyvie, N. Aberdeen, TURREFF; near Letterkenny, Co. Donegal, BROWNING.
Var. WIRTGENIANA (F. Sch.). Sidmouth, S. Devon, MASON.
Var. RARIPILA Briq. Derby, BULLEY; Hever, Kent, Sir J. TALBOT.

558/13. M. ARVENSIS L. var. In chalk field, Henley, Oxon, DRUCE.
Var. AUSTRIACA (Jacq.) Briq. Berwick, Northumberland, A. H. EVANS.

Var. HIRTIPES (Fraser). Toynton All Saints, Lincs, MASON.

Var. PARIETARIIFOLIA Beck. Lough Grue, Fermanagh, Miss I. M. ROPER. Sp. non vidi.

559/1. LYCOPUS EUROPAEUS L., var. GLABRESCENS Schmideley. Ware, Herts, DRUCE.

561/5. THYMUS PYCNOTRICHUS (Uechtr.) Ronn. Ulladale, N. Harris; Anacoona, Co. Sligo; Black Head, Co. Clare; Cave Hill, near Belfast, Co. Antrim, DRUCE.

561/8. T. DRUCEI Ronn. Ulladale, Tarbert, Amhuinnsuidh, N. Harris; Ben Bulben, Co. Sligo; cliffs of Moher, Co. Clare, DRUCE.

561/9. T. ZETLANDICUS Ronn. & Dr. Nisishee, S. Harris, DRUCE.

561/10. T. NEGLECTUS Ronn. Loch Langavat, Amhuinnsuidh, N. Harris; Roundstone, Galway; Ben Bulben, Co. Sligo; Derrynane, Co. Kerry, DRUCE.

561/11. T. BRITANNICUS Ronn. Tarbert, N. Harris; Nisishee, S. Harris; Anacoona, Co. Sligo; Carnsore Point and Lady's Island Lake, Co. Wexford; Letterkenny, Co. Donegal; Roundstone, Galway, DRUCE; Portrush, Co. Antrim, Miss I. M. ROPER.

562/5. SATUREIA ASCENDENS (Jord.) Dr., var. BRIGGSII Dr. Wool, Dorset, 1926, L. B. HALL.

562/7. S. NEPETA (L.) Scheele. Isle of Herm, Channel Isles, Mrs HICHENS.

†569/5. NEPETA MUSSINI Sprengel. Waste ground, Bristol, W. Gloster, DRUCE. Det. J. FRASER.

†570/3. DRACOCEPHALUM PARVIFLORUM Nutt. Avonmouth, W. Gloster, C. & N. SANDWITH.

573/1. PRUNELLA VULGARIS L., var. NEMORALIS Beguinot. Glencar, Co. Leitrim, Miss I. M. ROPER; Cashel, Galway; Blarney, Co. Cork, DRUCE.

573/2. P. LACINIATA L., f. ALBA. Cobham, Kent, Miss BACON and Major ORME; St Lawrence, Isle of Wight, in great plenty in a chalky field above the Undercliff, 1927, Rev. E. M. REYNOLDS; Heathland, East
n/ Do~~rr~~yland, N. Essex, BROWN.

575/1. SIDERITIS MONTANA L. Swaythling, S. Hants, RAYNER.

577/4. STACHYS AMBIGUA Sm. Feizor, Craven, Yorks, J. N. FRANKLAND, ex F. W. HOLDER.

577/5. S. PALUSTRIS L., var. CANESCENS Lange. St John in the Vale, Cumberland, MASON.
×SYLVATICA. Egloskerry, Cornwall, AMHERST; Feizor, Craven, Yorks, HOLDER.

†577/7. S. ANNUA L. Swaythling, S. Hants, RAYNER.

†577/9. S. SALVIIFOLIA Ten. Dagenham, S. Essex, DRUCE, MELVILLE and SMITH. (A regrettable error in the *List*, where it is misprinted *salicifolia*.)

578/4. GALEOPSIS LADANUM L., var. INTERMEDIA (Vill.). Near Swaythling, S. Hants, RAYNER.

†579/1. LEONURUS CARDIACA L. Stoke, near Medway, Kent, Miss STEVENS.

†580/1. WIEDEMANNIA ORIENTALIS F. & M. Burton-on-Trent, Staffs, Sir R. CURTIS.

587/1. AJUGA REPTANS L., var. ALPINA Koch. Cronkley Fell, Yorks, DRUCE.

†588/1. PLANTAGO INDICA L. Avonmouth, W. Gloster, SANDWITH and GIBBONS.

588/8. P. LANCEOLATA L., var. DEPRESSA Rostr. On the sands at Nisishee, S. Harris, DRUCE.

†588/16. P. LAGOPUS L. Burton-on-Trent, Staffs; Splott, Glamorgan, DRUCE, teste Dr PROBST; Avonmouth, W. Gloster, SANDWITH and GIBBONS.

†593/1. CORRIGIOLA LITTORALIS L. In some plenty on the railway track near Freshfield, Lancs, HOLDER. Alien, of course.

†600/5. CHENOPODIUM URBICUM L. Avonmouth, West Gloster, SANDWITH and GIBBONS.

†600/7. C. OPULIFOLIUM Schrad. Electric Power Station, Dagenham, Essex, [2419]; Colchester, Essex; Splott, Glamorgan, [276], MELVILLE; Shirehampton, Bristol, W. Gloster, slightly verging into *Platanoides*, C. & N. SANDWITH; Burton-on-Trent, Staffs, DRUCE.
Var. MUCRONULATUM G. Beck. Swaythling, S. Hants, RAYNER; Bristol, W. Gloster, C. & N. SANDWITH.

600/8. C. ALBUM L., var. or sub-sp. SUBFICIFOLIUM (Murr) Dr. Didcot, Berks; Burton-on-Trent, Staffs, DRUCE; Par, Cornwall; Bristol, W. Gloster [7], C. & N. SANDWITH.

Var. lanceolatiforme (Murr). Ware, Herts [4]; Burton-on-Trent, Staffs; Didcot, Berks; West Drayton, Middlesex, Druce; Avonmouth, W. Gloster [7], C. & N. Sandwith.

Var. paucidens (Murr). Boston, Lincs, approaching *pseudopulifolium*, Druce; near Swaythling, S. Hants, Rayner; Hackney, Middlesex [2672], Melville; Burton-on-Trent, Staffs; Didcot, Berks, Druce.

Var. glomerulosum (Reichb.) Murr. Hackney, Middlesex [272], Melville.

Var. pseudopulifolium (Scholz). Salmonby, Boston, N. Lincs, Druce.

Var. viridescens St Amans. Walsall, Burton-on-Trent, Staffs, Druce; Bristol, W. Gloster [6], C. & N. Sandwith; Galashiels, Selkirk, Miss I. M. Hayward; Par, Cornwall, Medlin.

Var. pseudo-Borbasii (Murr) Dr. Burton-on-Trent, Staffs; Didcot, Berks, Druce.

Var. subcuneatum (Murr). Burton-on-Trent, Staffs, Druce.

Var. bernburgense (Zschacke) Dr. Bristol, W. Gloster [3], C. & N. Sandwith.

×striatum. Bristol, W. Gloster [8], C. & N. Sandwith.

×opulifolium = Preismanni Murr. Burton-on-Trent, Walsall, Staffs; Didcot, Berks, Druce.

†600/9. C. Borbasii Murr. (album × opulifolium). Bristol, W. Gloster, C. & N. Sandwith; Boston Docks, Lincoln, Druce.

†600/11. C. leptophyllum Nutt. Avonmouth, W. Gloster [5], Sandwith; Par, Cornwall, Thurston.

600/12. C. ficifolium Sm. Weed at Parkhurst, Sussex, 1927, Burdon, as *album* var.; North Hayling, S. Hants [13], C. & N. Sandwith.

Forma microphyllum Murr. West Drayton, Middlesex, Druce.

†600/13. C. glaucum L. Avonmouth, W. Gloster, Sandwith and Gibbons.

600/15. C. polyspermum L. Avonmouth, W. Gloster [12], C. & N. Sandwith.

†600/16. C. Ambrosiodes L. Avonmouth, W. Gloster, Sandwith and Gibbons.

†600/17. C. anthelminticum L. Newport, Countess Wear, near Exeter, D'Urban.

†600/21. C. hircinum Schrad. Avonmouth, W. Gloster, C. & N. Sandwith.

†600/25. C. ambiguum R. Br. Bristol, W. Gloster, C. & N. Sandwith.

†600/26. C. carinatum R. Br. Cardiff, Glamorgan, Druce; Bradford, Yorks, Cryer.

†604/1. BETA TRIGYNA W. & K. Shirehampton, W. Gloster, SANDWITH and GIBBONS.

606/3. ATRIPLEX PATULA L., var. ERECTA Syme. Llanfairfechan, Carnarvon, F. J. JONES; Scarborough, Yorks, MASON.
Var. GRACILIS Dr. Garden ground, Nottingham, R. BULLEY; St Nicolas, Brighton, Sussex, Miss COTTES.

†606/10. A. HORTENSIS L., var. RUBRA Roth. Kessingland, Suffolk, C. & N. SANDWITH.

†606/11. A. TATARICA L. Burton-on-Trent, Staffs; Barry, Glamorgan, DRUCE.

†607/1. AXYRIS AMARANTHOIDES L. Littlehampton, Sussex, ex A. GRAVESON.

†609/1. CORISPERMUM HYSSOPIFOLIUM L. Newport, Isle of Wight, J. W. LONG.

†610/1. KOCHIA SCOPARIA L. Avonmouth, W. Gloster, SANDWITH and GIBBONS.

612/1. DONDIA FRUCTICOSA Dr. (SUAEDA). Gibraltar Point, N. Lincs, Dr H. WILLOUGHBY SMITH, a most important extension of the range of this local species.

613/1. SALSOLA KALI L., var. TRAGUS (L.). Burton-on-Trent, Staffs, DRUCE; Port Meadow, Oxford, Lady DOUIE.

615/3. POLYGONUM BISTORTA L. Cutcombe, Somerset, AMHERST.

615/7. P. PERSICARIA L., var. ELATUM Gren. & Godr. Loch of Loirston, Kincardine [39], Miss TODD.
Var. AGRESTE Fr. Near Tiverton, Devon, Col. WATTS.

615/12. P. MARITIMUM L. Alderney, Channel Isles, Mrs HICHENS and SLEDGE.

615/14. P. AVICULARE L. Tarbert, N. Harris, DRUCE.

615/15. P. EQUALE Lindm. Burton-on-Trent, Staffs, DRUCE; Kendal, Westmorland; Heigham, Norfolk, MASON.

†615/18. P. EQUISETIFORME Sibth. & Sm. Coup, near Glasgow, Lanark, GRIERSON.

†615/19. P. PATULUM M. Bieb. Burton-on-Trent, Staffs, DRUCE.

†615/24. P. PLEBEJUM R. Br. Bristol, N. Somerset, Mrs SANDWITH.

†615/31. P. polystachyum Wallich. Bettws-y-Coed, Carnarvon, Webb; about an old mill on the Leanan River, Co. Donegal, Browning; Mardley Heath, Herts, Dymes.

†615/32. P. cuspidatum S. & Z. West Drayton, Middlesex; moors near Bumper Castle, Derby, Druce.

617/1. Oxyria digyna Hill. Rocks in Uladale, N. Harris, Druce.

618/3. Rumex crispus L., var. trigranulatus Syme. West wall of Arran, on the shingle, Grierson.
×obtusifolius = R. acutus. Durham, S. Stoke, Oxon; Dundee, Druce.

†618/7. R. sanguineus L. Wareham, Dorset, 1926, 1928, L. B. Hall.

618/9. R. conglomeratus × crispus = R. Schulzei Haussk. Portmadoc, Carnarvon, *Hb. Druce*. Det. Danser.

†618/12. R. palustris Sm. Lockerley, S. Hants, Miss Salmon. I saw it there with other aliens, Druce.

618/13. R. maritimus L. Still on Lady's Island Lake, Co. Wexford, Druce.

†618/19. R. salicifolius Weinm. Ware, Herts, Druce; Avonmouth, W. Gloster, C. & N. Sandwith.

†618/22. R. dentatus Campd. Splott, Glamorgan, Smith; Bristol, Sandwith; Isle of Wight, Long. Det. Danser.

†618/29. R. obovatus Danser. Bristol, N. Somerset, Sandwith; Dagenham, Essex [2713 and 278], Melville; Maryborough, Lanark, Grierson. Det. Danser.

626/1. Viscum album L. On *Pyrus Aria* near Winton, H. Baker.

628/1. Euphorbia hyberna L. In a hedge, Chew Magna, Somerset, Mrs Thatcher.

†628/9. E. virgata W. & K. Dagenham, Essex, Druce, teste Dr Probst.

†628/11. E. Cyparissias L. In a field near Blatherwyck, Northants, Mrs Shefford O'Brien, ex Mrs G. Baring; near Hove, Sussex, on calcareous soil near a wood, Browning; Luddenham, Norfolk, Mason.

628/15. E. exigua L., var. retusa DC. In an arable field near Henley, Oxon, Druce and Chapple.

628/17. E. Peplis L. Alderney, Channel Isles, Mrs Hichens.

632/2. MERCURIALIS ANNUA L., var. AMBIGUA (L.). Near Newhaven, Sussex, H. BAKER.

633/2. ULMUS CARPINIFOLIA Borckh. Salmonby, etc., N. Lincs, DRUCE.

†633/3. ×U. HOLLANDICA (Mill.). Near Woodhall, N. Lincs, DRUCE.

633/4. U. PLOTII Dr. Horncastle and Boston, N. Lincs; Market Deeping, S. Lincs, DRUCE.

633/6. U. MINOR Mill. (not of Moss), var. SARNIENSIS (Loudon) = U. WHEATLEYI. Towcester, Overstone, Northants, DRUCE.

637/1. URTICA DIOICA L., var. ANGUSTIFOLIA Wimm. & Grab. Hundleby, N. Lincs, MASON.
Var. SUBINERMIS Uechtr. Melmerby, Cumberland, MASON.

637/2. U. URENS L., var. PARVIFOLIA Wedd. Park Hall, Essex, Fox in *Hb. Druce.*

†639/1. HELXINE SOLEIROLII Req. Introduced in several places as at St Saviour's, Jersey, ARSENE.

642/2. BETULA PUBESCENS Ehrh. [Ref. No. 1559.] At water's edge on small island in small unnamed loch at north base of Ronas Hill, North Roe, Shetland, June 14, 1928. A smal' spreading bush, quite inaccessible to sheep. Also uncarbonised branch in a bog in Mid Yell, Shetland, W. R. PRICE.

643/1. ALNUS ALNUS (L.) L. Morley Bridge, Co. Kerry, type (not *microcarpa*), DRUCE.

†643/2. A. INCANA Medik. Cothill, Berks, WATKINS.

644/1. CARPINUS BETULUS L. Mawsley Wood, Northants, DRUCE.

646/4. QUERCUS CERRIS × SUBER. The Lucombe Oak. The first printed notice of the Lucombe Oak is contained in a letter from John Zephaniah Holwell to his friend, John Campbell, which was read before the Royal Society on 1st April 1772 and was inserted in the 62nd vol. of the *Philosophical Transactions* (p. 128) which was printed in the same year. The letter is dated Exeter, 24th February 1772, and states that the Oak was raised by Mr William Lucombe in his nursery at St Thomas near that city about 7 years previously, when he had sown " a parcel of acorns saved from a tree of his own growth of the iron and wainscoat species," and that one of the seedlings had proved to be evergreen, and he concludes the letter by saying that several gentlemen round the neighbourhood and in the adjoining counties of Cornwall and Somerset had planted trees propagated by cuttings or grafts from the seedling in question. The letter is also copied in Dr A. Hunter's edition of Evelyn's "Silva," 4th ed., 1872, vol. i., p. 72, and is again referred to in Loudon's "Arboretum," 1838, vol. iii., p. 1888, and in this latter work it is also stated that the late Mr Pince, the gardener of Mr Lucombe, had informed Mr Loudon that the iron and wainscoat oak referred to by Mr Holwell and from which the acorns came (which is better known as Turkey Oak (*Quercus Cerris*) had stood near a Cork Oak (*Q. suber*) and that the blossom of the Turkey Oak, which was a female tree, had been impregnated by the pollen of the Cork Oak, and this accounted for the hybrid character of the seedling. Mr Holwell, F.R.S., was the chief of the unfortunate party who were confined in the celebrated "Black Hole of Calcutta" during the nights of the 20th and 21st June 1756, and was one of the 23 survivors out of 145 companions. In 1759 he succeeded Lord Clive as Governor of Bengal, but retired in 1761 and spent the rest of his life in England. He seems to have had some connection with Exeter. Wimslow Jones in *Trans. Devon Assoc.*, vol. xii., p. 417, 1880. Sent by W. S. M. D'Urban.

650/1. Salix pentandra L. Near Bicester, Oxon, Miss Wilkinson; near Cahirciveen, Co. Kerry, Druce.

650/8. S. Caprea × phylicifolia = S. bicolor Sm. Ellangowan, Milngavie, Dumbarton, Prof. Braid.

*650/9. ×S. ambigua Sm. Ulladale, N. Harris, Druce.

650/10. S. cinerea × viminalis. Potterne, Wilts, R. G. Gwatkin.

650/11. S. repens L. Loch Langavat, N. Harris, Druce.
Var. fusca (L.). Loch Langavat, N. Harris, Druce.
Var. incubacea (L.). Husinish, N. Harris, Druce.

650/13. S. phylicifolia L., var. Weigeliana. Ben Bulben, Co. Sligo, Druce and Chapple.
×purpurea = S. secernata F. B. W. Ellangowan, Milngavie, Dumbarton, Prof. Braid.

†650/22. S. Daphnoides Vill., var. pruinosa Wendl. Lockerley Mill, S. Hants, Druce.

653/2. Ceratophyllum aquaticum agg., probably C. demersum L. Wollaton Canal, Notts, R. Bulley.

659/1. Malaxis paludosa Sw. Loch Langavat, N. Harris, Druce.

663/1. Listera ovata (L.) Br. Small plants on sand-dunes, Borve, S. Harris; Husinish, N. Harris; Ben Bulben, Co. Sligo, Druce.

664/2. Spiranthes spiralis Koch. Rosses Point, Co. Sligo, Miss I. M. Roper.

664/3. S. Romanzoffiana Cham., var. stricta (Rydb.). Loch Neagh, August 1928, 4 specimens seen, Druce and R. H. Williamson.

667/2. Cephalanthera Damasonium (Mill.) Dr. E. Riding, Yorks, Flintoff.

[668/2. Helleborine leptochila (Godf.), var. dunensis. Coutainville, Manche, France, R. Meslin. See *Journ. Bot.* 217, 1928.]

669/5. Orchis Morio L., var. Churchillii Dr. Derrington, Halton Holgate, N. Lincs, Mason.

669/7. O. incarnata L., var. pulchrior Dr. Husinish, N. Harris; Borve, S. Harris, Druce; Durham, Heslop-Harrison; near Weymouth, Dorset, Sir M. Abbot-Anderson; Wicken Fen, Cambridge, F. R. Bharnetia.

Var. dunensis Dr. Husinish, N. Harris; Borve, S. Harris, Druce.

×maculata. Water meadow near Twyford, S. Hants, Druce and Hall.

×praetermissa. Near Winchester, Hants [20, 21, 23, 31, 32], Cary Wilson; near Twyford, S. Hants, Druce and Hall.

669/8. O. praetermissa Dr. Beckdale, Yorks, *Hb. Mason*; Winton, Hants, some with reversed flowers, Cary Wilson; Stoke Lyne, Oxon, Powell; Cheesefoot Head, Hants, on chalk downs, Hall; Hichen Meads, Hants, Druce and Hall; Borve, Nisishee, S. Harris; Husinish, N. Harris, Druce.

Var. pulchella Dr. Colonsay, Lady Mary Manners; Husinish, N. Harris; Nisishee, S. Harris; Callinish, Lewis, Druce; Rhoscolin, Anglesey, Mason.

Var. protensa. Meadows near Mitcham, S. Hants, Druce.

669/10. O. maculata L. Leverborough, S. Harris; Tarbort, N. Harris; Callinish, Lewis; Shadfield, Ampfield, S. Hants, Druce and Hall.

Var. candidissima (Weber). Loch Langavat, N. Harris, Druce; Ballyvaughan, Co. Clare, O'Kelly.

×praetermissa. Winton, S. Hants [14, 15, 28, 33, 36], Cary Wilson; Melmerby, Cumberland, Mason, as *latifolia*; Nisishee, Borve, S. Harris; Husinish, N. Harris; Callinish, Lewis; marshes near Twyford, S. Hants, Druce and Hall.

669/11. O. Fuchsii Dr. Very luxuriant at Ampfield and Cheesefoot Head, S. Hants, 2-3 ft. high, spike 4-5 inches long, Druce and Hall; Powley, S. Hants, Gilmour.

×praetermissa. Cothill, Berks; Blackhead, Co. Clare, Druce; Ampfield, S. Hants, Druce and Hall; chalk downs at Cheesefoot Head, S. Hants, Hall; near Winton, S. Hants [26, 34, 35], Cary Wilson.

×maculata. Chew Magna, Somerset, Mrs Thatcher; Water meadows, Wickham, Ampfield, S. Hants, Druce and Hall.

×incarnata. Winton, S. Hants [12], Cary Wilson. No. 18 is, perhaps, this hybrid, leaves nearly free from spots, flower lip reflexed.

669/12. O. O'KELLYI Dr. Ben Bulben, Co. Sligo; on sea-shell sand, Roundstone, Galway; Bix Bottom, Oxon, DRUCE; Cheesefoot Head chalk downs, S. Hants, DRUCE and HALL; Conochan Burn, Fintry, Stirlingshire, J. MACQUEEN.

674/1. HABENARIA GYMNADENIA Dr. Ben Bulben, Co. Sligo, DRUCE; with pure white flowers, Neaton, Winchester, Hants, DRUCE and HALL.

674/4. H. VIRIDIS (L.) Br. Near Stoke-on-Trent, Staffs, Rev. E. DEACON.
Var. VAILLANTII (Ten.) Fern. Buxton, Derby; sand-dunes, Husinish, N. Harris, with the type, DRUCE; Teesdale. Durham, DRUCE and Miss B. BUCKLER.

674/7. H. BIFOLIA Br. Loch Langavat, N. Harris, DRUCE; Stoke Lyne, Oxon, H. POWELL.

†675/1. CYPRIPEDIUM CALCEOLUS L. Found growing wild in a field near Hoar Cross, Staffs, but doubtless originally planted there. Sir R. CURTIS. It has appeared in Yorkshire this year.

676/1. IRIS PSEUDACORUS L. Small barren plants, with narrow leaves, grew in the midst of round knolls of sand on the coast near Keel, Achill Island, Co. Mayo, DRUCE.

680/1. SISYRINCHIUM ANGUSTIFOLIUM Mill. In a wettish pasture, Glen Car, Co. Sligo, DRUCE.

†680/2. S. CALIFORNICUM Ait. Has increased its range near Rosslare, Co. Wexford, where it was very abundant, a few plants being still in flower in August, DRUCE.

†683/1. TRITONIA CROCOSMIFLORA Nich. Blarney Castle, Co. Cork; Ben Bulben, Co. Sligo, DRUCE.

†684/4. NARCISSUS POETICUS L. On a heathy common, Thakeham, Sussex, E. PAYNE.

†702/16. ALLIUM ROSEUM L. Established at Henfield. Sussex, E. PAYNE.

†704/1. HYACINTHUS COMOSUS L. In a rough grassy field near Thursley, Surrey, ex F. CLARKE.

706/4. SCILLA HISPANICA Mill., var. ALBA. Near Beaminster, Dorset, A. W. GRAVESON.

†707/2. ORNITHOGALUM UMBELLATUM L. Near Walditch, Dorset, Mrs S. ALSTON.

†710/1. TULIPA SYLVESTRIS L. Willoughby Waterleys, Leicester, BEMROSE.

†718/16. JUNCUS TENUIS Willd. Grounds of Highlands, Jersey, ARSENE; Done Junction, Cardigan; Ballater, S. Aberdeen, Miss TODD; by the road between Basingstoke and Odiham, N. Hants, Sir G. TALBOT.

719/4. JUNCOIDES MULTIFLORUM (Retz.) Dr. Tarbert, N. Harris. Var. CONGESTUM (Syme) Dr. Loch Langavat, N. Harris, DRUCE.

722/4. SPARGANIUM ANGUSTIFOLIUM Michx. Rodil, S. Harris, DRUCE.

722/5. S. MINIMUM Fr. A very slender form, Keenaghan, Co. Donegal, DRUCE.

737/4. POTAMOGETON COLORATUS Hornem. Hell Kettles, Durham, J. E. NOWERS.

×PUSILLUS = P. PERPYGMAEUS Hagstr. Glen Cahir, Co. Clare, in beautiful condition, flowering freely, August 1928, DRUCE and R. H. WILLIAMSON.

737/14. ×P. UPSALIENSIS Tis. River mill dam, Bindon Abbey, Dorset, September 1928, barren, DRUCE.

737/27. P. TRICHOIDES C. & S. Old Woking, Surrey, Lady DAVY.

738/1. RUPPIA MARITIMA L. (SPIRALIS). Lady's Island Lake, Co. Wexford, August 1928, DRUCE.

738/2. R. ROSTELLATA Koch. Nisishee, S. Harris, DRUCE.

745/1. ELEOCHARIS PALUSTRIS (L.) Br. Dwarf, rigid form, with very long creeping stems, Formby, Lancs, Sir G. TALBOT.

746/6. SCIRPUS AMERICANUS Pers. (S. PUNGENS Roth). This plant, which hitherto has only been known from the border of St Ouen's Pond, Jersey, so far as the British Isles are concerned, has been found in Lancashire in a hollow among the dunes near the sea-coast in the vicinity of Formby by R. E. BAKER. He states that there is a patch about 25 yards square. That all the botanists who have visited the dunes here should have passed this plant by seems to be almost impossible, had we not had examples in *Scorzonera*, *Centaurium Scilloides*, and *Chaerophyllum aureum* of conspicuous plants being overlooked. Alas we have to bear in mind that idiotic and mischievous practice which weak-minded sentimentalists seem to be making a cult of—that of sowing seeds or introducing species up and down the countryside. The mischief is that really indigenous plants may be falsely branded as alien. One can scarcely credit the most microcephalous sentimentalist endowing this Scirpus with sufficient beauty to think he was adding fresh charms to the floral displays of Lancashire. With this record we have to associate the discovery in two or three places at Formby of another Jersey (and East Anglian) species, *Weingaertneria canescens* by Mr Justice Talbot. The discovery seemed to me of sufficient importance to justify an expedition to examine the locality. Aided by a map drawn by Mr Baker and accompanied by Mr Holder and Mr Chapple, the Scirpus was found growing in one of the slacks between the dunes, in a large patch as described. If intentionally planted there, it must have been some years ago. It was in good condition and no aliens were near.

746/13. S. fluitans L. Between Rodil and Leverborough, S. Harris, Druce.

746/15. S. rufus (Huds.) Schrad. Nisishee, S. Harris, Druce; bank of Solway near Dumfries, Miss Bacon; Kettlestone and near Sheringham, Norfolk, Rev. E. M. Reynolds.

747/2. Eriophorum angustifolium Roth, var. brevisetum Dr. Near Churchtown Station, Southport, Lancs, Wagstaffe.
Var. elatius Koch. Christchurch, S. Hants, L. B. Hall.

*748/1. Rynchospora fusca (L.) Vahl. On Maiden Down, near Burlescombe, S. Devon, Col. Watts.

748/2. R. alba (L.) Vahl. Common round Loch Langavat, N. Harris, Druce.

753/7. Carex inflata Huds. Loch Valtos, Lewis, a robust form but not with flat leaves, Druce.
Var. brunnescens (And.) Dr. Loch Langavat, N. Harris; near Callinish, Lewis, Druce.

753/16. C. Sadleri Linton. Leverborough, S. Harris, Druce.

753/19. C. fulva Host. Leverborough, S. Harris, common and rather variable in the island, Druce.

753/20. C. flava L. × lepidocarpa. Loch Langavat, N. Harris, Druce.
Var. oedocarpa And. Loch Langavat, N. Harris, Druce.
× fulva = xanthocarpa. Loch Langavat, N. Harris, Druce.

753/21. C. lepidocarpa Tausch. Loch Langavat, N. Harris, Druce.

753/23. C. extensa Huds., var. Ecklonii (Nees) Kük. Four Mile Bridge, Anglesey, Mason.

753/34. C. pilulifera L. Loch Langavat, Ulladale, N. Harris, Druce.

753/49. C. Goodenowii Gay, var. chlorostachya (Reichb.) Asch. Loch Langavat, N. Harris, Druce.
Var. stenocarpa Kük. Loch Langavat, N. Harris, Druce.
Var. recta (Fleisch.) A. & G. Loch Langavat, N. Harris; Forfar Loch, Angus, Druce.

753/61. C. Pairaei F. Schultz. Horsford, W. Norfolk, as *muricata*, Mason.

753/63. C. paniculata L. Overton-on-Dee, Flint, Mason.

753/65. C. diandra Schrank. Scotston Moor, Aberdeen, Miss Todd.

753/67. C. arenaria L., var. remota Marss. Formby, Lancs, Mason.

753/68. C. divisa Huds. Sheen Common, Surrey, H. W. Kew.

753/74. C. pulicaris L. Amhuinnsuidh, etc., common in Harris, Druce.

753/75. C. dioica L. Loch Langavat, etc., N. Harris, specimens over 12 inches high, Druce.

†754/1. Panicum miliaceum L. Didcot, Berks; W. Drayton, Middlesex; Burton-on-Trent, Staffs, Druce.

†754/2. P. capillare L. Falconhurst, Kent, Sir G. Talbot; Avonmouth, W. Gloster, Sandwith and Gibbons.

†756/4. Setaria verticillata Beauv. and †756/6. S. geniculata Vahl. Avonmouth, W. Gloster, Sandwith and Gibbons.

†765/2. Phalaris bulbosa L. Airdrie, Lanark, Grierson; Burton-on-Trent, Staffs, Druce.

†765/3. P. aquatica L. (caerulescens Desf.). Talgarth, Pennal, Merioneth, Mrs Wedgwood; Brackenbury Coup, Lanark, Grierson.

†765/6. P. brachystachys Link. Bristol, W. Gloster, Sandwith.

†765/7. P. paradoxa L. Glasgow, Grierson; Burton-on-Trent, Staffs, Druce.

†765/8. P. angusta Nees. Bristol, W. Gloster, Sandwith.

766/1. Anthoxanthum odoratum L., var. villosum Lois. Husinish, N. Harris, Druce.

†766/2. A. aristatum Boiss. Tips, Robroyston, Lanark, Grierson.

770/4. Alopecurus bulbosus Gouan. Ridge, Dorset, in great abundance, distributed this year, Druce; near Wareham, Dorset, L. B. Hall.

†771/7. Stipa Neesiana Trin. & Rupr. Exeter, Miller.

†777/2. Phleum alpinum L. Didcot, Berks, Druce. Det. at Kew.

†777/9. P. subulatum A. & G. Bristol, W. Gloster, Sandwith.

†780/1. AGROSTIS VERTICILLATA Vill. Burton-on-Trent, Staffs, DRUCE.

780/3. A. CAPILLARIS L., var. DUBIA (DC.). (ARISTATA). Parkstone, Dorset, L. B. HALL.

780/3. A. NIGRA With. Near Letterkenny, Co. Donegal, DRUCE, teste HOWARTH.

†780/9. A. HYEMALIS B. S. P. Avonmouth, W. Gloster, SANDWITH and GIBBONS. This is the *A. scabra* Willd., but *hyemalis* is the older trivial since it is based on *Cornucopiae hyemalis* of Walter Fl. Carolin. of 1788.

†782/1. POLYPOGON MONSPELIENSIS (L.) Desf. Grimsby, N. Lincs. MASON.

784/1. GASTRIDIUM VENTRICOSUM (Gouan) S. & T. In July 1928 I noticed a considerable quantity growing in a rough pasture above the cliffs at Monknash Cwm, Glamorgan. In August I again visited the Cwm and was shown the grass by Mr Bruce on a limestone escarpment near the sea below and at a considerable distance from the cliff pasture. It was associated on the limestone escarpment with *Helianthemum Chamaecistus*, *Hippocrepis comosa*, *Malva moschata* var. *heterophylla* and *Inula squarrosa* S. & T., etc. Mr Bruce, whose family have owned the property for a considerable time, noted the *Gastridium* here a few years ago. He states that the rough cliff pasture had at one time been under cultivation. The grass appears absolutely native on the limestone. It looks, indeed, quite as native as in similar situations on limestone slopes at Clifton and in the Channel Isles where I have also seen it. Professor M'Lean has also noticed the plant in one other locality in Glamorgan.

787/1. AMMOPHILA ARENARIA (L.) Link. Husinish, N. Harris, DRUCE.

788/1. AIRA CARYOPHYLLEA L., var. MAJOR Gaud. Monifieth, Angus, Miss TODD.

789/2. A. PRAECOX L., var. PROSTRATA Dr. Guernsey, Mrs HICHENS; Ousby, Cumberland, MASON.

*790/1. WEINGAERTNERIA CANESCENS (L.) Bernh. In some plenty in two places at Formby, Lancs, Sir G. TALBOT. An important discovery and a wide extension of the range. See note under *Scirpus americanus*.

†794/8. AVENA ORIENTALIS L. Didcot, Berks, DRUCE.

795/1. ARRHENATHERUM AVENACEUM Beauv., var. BIARISTATUM Dr. Walkford, S. Hants; near Wareham, Dorset, L. B. HALL; Abbotsbury, Dorset, DRUCE.

*795/2. A. TUBEROSUM (Gilib.) Dr. Chesil Beach, Dorset; sand-dunes. Nisishee, S. Harris, DRUCE.

†796/1. GAUDINIA FRAGILIS Beauv. Bristol, N. Somerset, SANDWITH.

†808/1. CYNOSURUS ECHINATUS L. Mablethorpe, Lincs, MASON; Shoreham, Sussex, Miss COTTES; abundant at West Drayton, Middlesex; Burton-on-Trent, Staffs, DRUCE.

809/3. KOELERIA BRITANNICA Domin. Levens, Westmorland, MASON.

809/4. K. GLAUCA DC. Monifieth, Angus, Miss TODD, teste HOWARTH.

813/1. MOLINIA CAERULEA Moench, var. VIRIDIFLORA Lej. Slieve Donard, Co. Down, Miss I. M. ROPER.

822/2. BRIZA MINOR L. Lytchett Minster, Dorset; Hinton, S. Hants, L. B. HALL.

†822/3. B. MAXIMA L. Parkstone, Dorset, per H. J. W., L. B. HALL.

824/1. POA CHAIXII Vill. Monifieth, Angus, Miss TODD.

824/3. P. SUBCAERULEA Sm. Husinish, N. Harris; Nisishee, S. Harris; Ridge, Chesil Beach, Dorset, DRUCE.

†824/5. P. PALUSTRIS L. Bristol, N. Somerset, SANDWITH.

824/13. P. BULBOSA L., var. VIVIPARA Koch. La Moye, Jersey, Lady DAVY. This station is far distant from the original locality.

*824/15. P. PERSICA Trin. Dagenham, S. Essex, MELVILLE.

825/3. GLYCERIA PLICATA Fr., var. DECLINATA (Bréb.). Cranbourne, Corfe, Dorset, L. B. HALL.

826/7. FESTUCA RUBRA L., var. BARBATA Hack. Amhuinnsuidh, N. Harris, DRUCE.
Var. COMMUTATA Gaud. (FALLAX Thuill.). Middleton-in-Teesdale, Durham, DRUCE.

826/9. F. OVINA L., var. FIRMULA Hack. Upper Rawthey, Cautley, Yorks, TRAPNELL.
Forma VIVIPARA. Killarney, Co. Kerry, DRUCE.
Var. HISPIDULA Hack. Howick, Northumberland, Miss TODD.

826/12. F. CAPILLATA Lam., f. VIVIPARA. Tarbert, N. Harris, DRUCE.

†826/16. F. DANTHONII A. & G. Burton-on-Trent, Staffs, still persisting but not so abundant as in 1927, DRUCE.

†827/1. BROMUS RIGENS L. Avonmouth, W. Gloster, C. & N. SANDWITH.

†827/4. B. TECTORUM L. In some plenty at Burton-on-Trent, Staffs, DRUCE; Grimsby, Lincs, MASON; Avonmouth, W. Gloster, C. & N. SANDWITH.

827/7. B. ERECTUS Huds. Boroden, Rutland, DRUCE.

†827/9. B. INERMIS Leyss. Avonmouth, W. Gloster, SANDWITH; Braunstone, Leicester, BEMROSE.

†827/13. B. UNIOLOIDES H. B. K. Avonmouth, W. Gloster, C. & N. SANDWITH.

†827/14. B. BRIZAEFORMIS F. & M. Dagenham, S. Essex (vice *Briza maxima*), MELVILLE.

†827/16. B. SECALINUS L., var. SUBMUTICUS Reichb. Robroyston, Lanark, GRIERSON; Splott, Glamorgan, SMITH and MELVILLE.

†827/22. B. ARVENSIS L. Burton-on-Trent, Staffs, DRUCE; Avonmouth, W. Gloster, C. & N. SANDWITH; Brackenridge, Lanark, GRIERSON.

†827/26. B. MACROSTACHYS Desf. Cardiff, Glamorgan, WADE.

†827/27. B. SQUARROSUS L. Fine specimens at Dagenham, Essex, MELVILLE.

828/2. BRACHYPODIUM PINNATUM (L.) Beauv., var. CORNICULATUM Bréb. Dunston, Lincs, MASON.
Var. PUBESCENS S. F. Gray. Otterton Parish, Devon, Major ORME.

829/1. LOLIUM PERENNE L., var. ORGYALE Doell. Splott, Cardiff, Glamorgan, WADE.

†829/2. L. ARVENSE With. Coup near Glasgow, Lanark, GRIERSON.

†829/3. L. REMOTUM Schrank. (LINICOLA A. Br.). In a flax field, Letterkenny, Co. Donegal, DRUCE and CHAPPLE.

†829/4. L. MULTIFLORUM Lam. Maryborough, Lanark, GRIERSON; Burton, Staffs; Letterkenny, Donegal, DRUCE.
Var. MUTICUM DC. Langley, Bucks; Letterkenny, Co. Donegal, DRUCE; Glasgow Coups, Lanark, GRIERSON.

830/1. AGROPYRON JUNCEUM Beauv. Husinish, N. Harris, DRUCE.
× REPENS = HACKELII Dr. Keel, Achill Island, Co. Mayo, very abundant, and as a hybrid nearer JUNCEUM, DRUCE; Elliot, Angus, Miss TODD; Isle of Wight, WATERFALL.

830/2. A. PUNGENS × REPENS = OLIVERII. Quenvais, Jersey, DRUCE.

830/4. A. REPENS Beauv., var. LEERSIANA Gray. Quenvais, Jersey, ARSENE; Myrtle Road Coup, Glasgow, Lanark, GRIERSON.

Var. VAILLANTIANUM (Schreb.) Schrank. Quenvais, Jersey, ARSENE; Airdrie and Monkland Sidings, Lanark, GRIERSON; Silloth, Cumberland, MASON; Nottingham, R. BULLEY.

Var. LASIORACHIS Hack. Quenvais, Jersey, ARSENE.

†832/11. TRITICUM CYLINDRICUM C. P. & G. Avonmouth, W. Gloster, C. & N. SANDWITH.

†835/3. HORDEUM MARINUM L. Burton-on-Trent, Staffs, DRUCE.

†835/7. H. JUBATUM L. Didcot, Berks, DRUCE.

†835/10. H. COELESTE L. On rubbish. Bewdley, Worcester, ex C. REA.

†836/4. ELYMUS CAPUT-MEDUSAE L. Isle of Wight, LONG; Brackenridge, Lanark, GRIERSON.

†840/1. TAXUS BACCATA L., var. FASTIGIATA Lindl. Glen Car Waterfall, Leitrim, Miss I. M. ROPER.

†841/4. PINUS NIGRA Arnold. Brackley, Northants, DRUCE.

844/9. EQUISETUM VARIEGATUM (Schleich.) Weber. Kincardine, Miss TODD.

Var. ARENARIUM. Rosses Point, Co. Sligo, Miss I. M. ROPER.

851/4. ASPLENIUM LANCEOLATUM Huds. Arklow Head, Wicklow, G. A. PALMER.

851/5. A. ADIANTUM-NIGRUM L. Near Goathland, North Yorks. Found by Dr W. Arthur Sledge, of Leeds, growing on masonry near Goathland, on 17th November 1928. A specimen of this fern has been submitted to Dr G. Claridge Druce, F.R.S., who refers to it as an obtuse form. It is not included in Canon Fisher's " List of the Whitby Flowering Plants," and to the best of my knowledge and belief it has not been recorded in the Whitby district. Baker includes it in all areas. Now, the Esk area covers a tract of country from Marske to the South of Robin Hood's Bay along the coast, and to Rosedale inland. Canon Fisher's Whitby district is, therefore, a large portion of this area. Consequently I conclude that it is a rare plant in Baker's Esk area—No. 4. —R. J. FLINTOFF.

853/1. ATHYRIUM FILIX-FOEMINA (L.) Roth, var. CONVEXUM Newm. Base of Ben Bulben, Co. Sligo; near Macroon, Co. Cork, DRUCE;

railway bridge, Goathland, York, FLINTOFF. A var. like FISSIDENS but more FOLIOSA, Colonsay; also near this at Lochmaddy, N. Uist, Hon. Mrs G. BARING.

856/1. DRYOPTERIS FILIX-MAS, var. PALEACEA (Don) Dr., forma POLYDACTYLA. Killarney, Kerry, W. D. MILLER.

857/4. CYSTOPTERIS FILIX-FRAGILIS (L.) Bernh. Walls of Salmonby Church, N. Lincs, DRUCE and MASON.

Var. DENTATA (Hook.). Gleniffe, Ben Bulben range, Co. Sligo, Miss I. M. ROPER.

864/1. OSMUNDA REGALIS L. Laughton, N. Lincs, ex Miss D. MEYNELL.

*869/2. ISOETES ECHINOSPORA Durieu. Littlesea, Dorset, sent me on July 7 by Sir MAURICE ABBOT-ANDERSON and on July 28 by Mr L. B. HALL. New to England but known from Wales, Scotland and Ireland. Sir Maurice told me that the plant was discovered by C. B. Metcalfe, of Reading, a Cambridge undergraduate, on June 25, 1928, and that it was identified at Cambridge as *I. lacustris*, but the microspores show distinctly that it is *echinospora* as recorded in *Journ. Bot.*

*870/6. LYCOPODIUM INUNDATUM L. Glendalough Lower Lake, Wicklow, J. P. BRUNKER in *Ir. Nat.*, 120, 1928.

870/7. L. SELAGO L. Ulladale, N. Harris, DRUCE.

871/1. SELAGINELLA SELAGINOIDES (L.) Link. Ulladale, Loch Langavat, N. Harris, DRUCE.

NOTES ON THE VEGETATION OF ZETLAND, 1928.

By W. R. Price.

During a fortnight's trip in Shetland taken in June by my brother and myself for the primary purpose of bird-watching, I was able to make some notes upon the vegetation, together with a small collection of plants over an area touching most of the larger islands. We were in Shetland from June 5th to 16th, which dates were unfortunately rather early for nesting, and extremely so for botanising, and I was constrained, therefore, to give more attention to the subject of plant communities and their distribution than I might otherwise have done. Indeed, the difficulty at most times of obtaining satisfactory flowering specimens owing to the early state of development seemed to emphasise the well-known fact of the poverty of the flora.

Having studied, before starting, the *Flora Zetlandica* and its "Additions," kindly given to me by Dr Claridge Druce, and after my return having gone through most of the literature mentioned therein, I have more recently referred to the works of Warming (*Oecology of Plants*), Ostenfeld (*Botany of the Faroes*), Crampton (*Vegetation of Caithness considered in relation to the Geology*), and finally Mr Turrill's recent article *The Flora of St Kilda* in the Report for 1927 of the Botanical Society and Exchange Club, with a view to framing a tentative and no doubt incomplete classification of Shetland plant Communities.

I submit below a table of these.

A. ARCTIC—ALPINE COMMUNITIES.

1. Lichen Heath Association.	Open; dominant—lichens and either mosses or *Plantago maritima*; frequent—*Loiseleuria procumbens, Salix herbacea, Lycopodium alpinum, Alchemilla alpina, Antennaria dioica, Thymus, Agrostis, Molinia, Nardus.* 90 per cent. bare (except lichens).
2. Subalpine Heath Association (open).	Open; dominant—*Empetrum*; frequent—*Lycopodium Selago.* 50 per cent. bare (except lichens).
3. Subalpine Grass Heath Association.	Open; descends to 200 ft. on exposed ridges; dominant—*Agrostis* or *Plantago maritima*; frequent—*Calluna, Festuca, Thymus.* 80 per cent. to 15 per cent. bare.
4. Subalpine Rocks (surface) Association.	Open: lichens.
5. Subalpine Rocks (crevices) Association.	Open: *Polytrichum, Nardus, Empetrum.*

6. Subalpine Heath (closed) Association.	Closed: descends to 200 ft. on exposed ridges, variable: dominant—*Vaccinium* or *Grimmia*: frequent—*Arctostaphylos*, *Calluna* (never dominant), *Eriophorum*, *Carex*, *Viola*.
B. HEATH—MOOR COMMUNITIES.	
7. Grass Heath Association.	Closed; dominant—grasses; frequent *Thymus*, *Calluna*.
8. Heath (Calluna Heath) Association.	Closed; dominant—*Calluna*; subdominant —*Anthoxanthum* or *Eriophorum* or *Deschampsia flexuosa*.
9. High Moor Association.	Closed; dominant—*Calluna* and *Sphagnum*: frequent—*Nardus*.
C. CULTIVATED LAND.	
10. Pasture.	
D. MARSHLAND COMMUNITIES.	
11. Peat Marsh Association.	Closed: dominant—*Carex* or *Juncus*: many species.
12. Reed Swamp Association.	Closed: dominant—*Juncus*, *Scirpus*, *Phalaris* or *Phragmites*.
13. Lake and stream margin Association.	Closed; mixed.
E. HALOPHYTE COMMUNITIES.	
(a) Associations indirectly consequent upon marine erosion.	
14. Halophyte Mat Association of cliff top exposed to spray.	Closed; dominant—*Plantago Coronopus* or *maritima*: frequent — *Cochlearia*, Thrift, *Cerastium tetrandrum*, *Sagina maritima*.
15. Landslide Association.	Open; ditto.
(b) Associations directly consequent upon marine erosion.	
16. Sea Cliffs Association.	Open: dominant — lichens; frequent — *Plantago Coronopus*, *Cochlearia*, Thrift, *Cerastium tetrandrum*, *Sagina maritima*.
(c) Associations dependent upon littoral deposits.	
17. Salt Marshes Association.	Open.
18. Coastal Sands Association.	Open.
19. Sea Beaches.	Open.

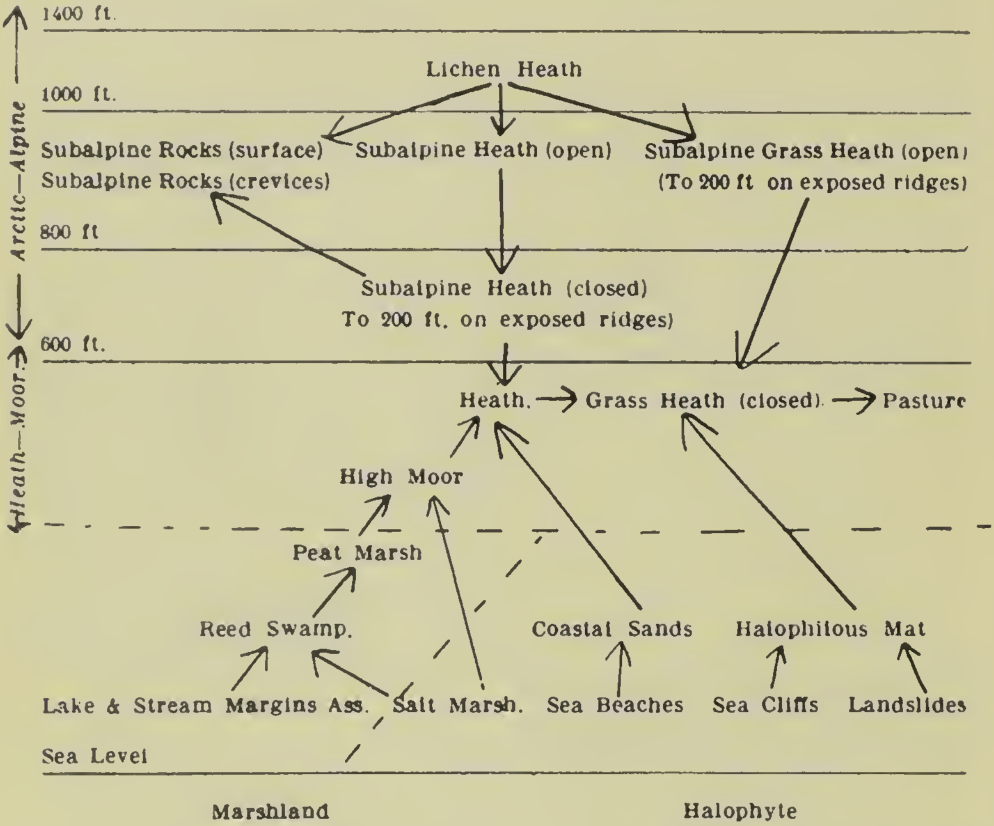
I have retained the classification upon an Ecological basis rather than upon a Physiognomic or Life Form one, and, using mostly the terms of Warming for the Associations, have arranged these under five Community headings.

The sequence of the Associations is roughly that of altitude and is a descending sequence, which gives some indication of order of development or Succession.

The latter I represent roughly in a table below, showing probable lines of development of Associations from three distinct points—the sea coast, the lakes and streams, and the arctic-alpine area.

The first emergence of small portions of these three colonisable areas from their ice covering on the final retreat of the glaciers would form the starting points of development of arctic precursors of the present marine, fresh-water, and arctic-alpine Associations. In the latter case the first area colonised would have been at a low level adjacent to the coast where some "cold-withstanding" or Psychrophytic Association such as the Fjäld-marker would establish itself.

With the subsequent development of new Associations, owing to change of climate and soil conditions and their movement with the retreat of the ice, the Fell and Tundra vegetation would retreat upwards till at the present time it is represented by a small area of open Lichen Heath almost confined to the summit of Ronas Hill.


1400 ft.
Lichen Heath
1000 ft.
Subalpine Rocks (surface)
Subalpine Heath (open)
Subalpine Grass Heath (open)
Subalpine Rocks (crevices)
(To 200 ft on exposed ridges)
800 ft
Subalpine Heath (closed)
To 200 ft. on exposed ridges)
600 ft.
Heath.
Grass Heath (closed).
Pasture
High Moor
Peat Marsh
Reed Swamp.
Coastal Sands
Halophilous Mat
Lake & Stream Margins Ass.
Salt Marsh.
Sea Beaches
Sea Cliffs
Landslides
Sea Level
Marshland
Halophyte
Arctic—Alpine
Heath—Moor

From here, then, as also from sea and lake margins, can to-day be traced an order of Succession from more primitive forms, earlier established, through no doubt many more intermediate forms than those recognised by me, to the more complex and furthest developed Sub-climax Association—Heath.

With respect to Shetland Heath, at any rate, it is without doubt the Biotic factor which is the decisive one. It is, therefore, a Subclimax in the sense of a Biotic Climax, further development by natural succession to Scrub Forest being prevented by the grazing of sheep and by human agency.

Heath, as generally understood in the sense of "Calluna Heath," "Upland Heath" (Grouse Moor), is in Shetland the occupier of the most favourable vegetational area (other than cultivated), of which the soil has been elaborated by the succession from earlier communities of lowland or highland type. Though the general character of the vegetation is, of course, primarily due to climatic factors, the relative characters or differences between the Associations are due to factors of edaphism and physiography, the chief of which are the supply of available water and degree of exposure.

It is to Heath Association, which is classed by Brockmann-Jerosch and Rübel[1] as Ericifruticeti of class Lignosa, that one should look for continued development into coniferous, broad-leaved or mixed scrub and forest. Bushland Forest and Forest Moor are names given by Warming for Scrub Forest Associations in which the dominant trees are usually *Pinus*, *Betula*, or both.

As already mentioned, Heath is the highest form of vegetational development that Shetland is now capable of, so long as sheep graze and firewood is liable to be cut, and it is upon Shetland Heath that, in the absence of sheep and human activity, trees would come.

The Pine forests of Finland extend a good 8° of latitude farther north than Shetland, and dwarf birch exist at latitude 65° in Iceland and Greenland and at 70° in Norway.

It is therefore not unreasonable to suppose that Shetland with its mild climate is capable of supporting a Scrub Forest vegetation of some size, composed of *Pinus*, *Betula*, and other trees.

Taking the Communities briefly in ascending order:—

E. The Halophytic are very well divisible into three sections according to Crompton (*l.c.*)—

c. Associations dependent upon marine littoral deposits.
b. Associations directly consequent upon marine erosion.
a. Associations indirectly consequent upon marine erosion.

Under these headings six Associations (Nos. 14-19) are identifiable.

The next two Communities, D. and C., together form an area of low-lying land extending from sea-level up to about 200 feet.

D. Marshland Communities are here perhaps better defined by Crompton as "Formations Zonal to Drainage System," as they constitute a small proportion of the uncultivated low-lying area up to 200 feet, that is, that area which is the drainage system of the higher-lying moors and hill slopes. The remainder of the area below 200 feet, which is neither "marshland" nor cultivated, consists of Heath, descending on well-drained land and spurs in places to the sea.

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[1] Die Einteilung der Pflanzengesellschaften nach Okologisch—Physiognomischen Gesichtspunkten. Leipzig—Engelmann, 1912.

C. Cultivated Areas, mostly pasture, are derived from the draining, burning or grazing of Heath-Moor Communities, and are not extensive.

B. Heath-Moor Communities. As remarked by Turrill, Heath and Moor are best treated as one owing to the difficulty of drawing a dividing line in the field.

However, it appeared to me that in Shetland, even though I should be sorry to have to draw dividing lines, there were three *fairly* distinct Associations of this class—from below upwards, the classical High Moor, the drier Heath, and the still drier (or grazed) Grass Heath where *Calluna* is sub-dominant to the grass. These together cover perhaps half the total area.

Evidence, of course, is not lacking in the peat of wood of *Pinus*, *Betula*, *Salix*, and many other broad-leaved trees and shrubs, but of the living trees (unplanted) there seems to be a complete absence save for a few Salices in the marshland and a rare Mountain Ash on Ronas Hill.

All observation failed to discover trees of however diminutive a size on heath or moor, until an ornithological observation of my brother's suggested the way, as described later.

A. Arctic-Alpine Communities.

These Associations are of mixed life-forms, as are those of the Halophyte Communities, there being a large proportion of Rock plants.

The Closed Subalpine Heath on Ronas Hill, though resembling many English Heaths in the dominance of *Vaccinium Myrtillus*, differed entirely from these and from the lower lying Calluna Heath both in the presence of *Vaccinium* spp. and other species not seen below, and in the small proportion of *Calluna*. This Association is variable and includes all the closed Shetland Heath other than Calluna Heath.

The Subalpine Grass Heath, which is actually the first open Association to be met with, is practically free from suffrutescent species except *Thymus* and a very little *Calluna*, and passes imperceptibly at lower altitudes into closed grass Heath, which is in part determined by exposure and in part by grazing. It is, therefore, found over a considerable range from 1000 feet to 200 feet, where West (*Journal of Botany* l., 267) reports it in Unst. It is to be regarded as a parallel development with Open Subalpine Heath from Lichen Heath in which grasses and mat-like herbs have prevented the development of suffrutescent species.

Open Subalpine Heath is, however, a more definitely arctic-alpine Association in which some 50 per cent. of the available space is occupied by one or two suffrutescent species such as *Empetrum*; it seems to be confined to Ronas Hill.

The Lichen Heath of the summit of Ronas Hill, described later, represents a struggle in 10 per cent. of area between stones of many subdominant species, few of which are found below this zone. Both these last two Associations approach in character the full arctic type of Tundra, and its analogue, the Psychrophytic Fjäld-Marker Association.

I will now give a more detailed account of Associations observed with notes on individual species.

On arrival at 6 p.m. on June 5th at Lerwick, the obvious thing was to stretch our legs till dusk, that is if dusk ever came. The nearest place of interest was Clickimin and its marvellous Broch. Many gulls and terns were nesting round the loch. Here we saw *Caltha* all in full flower, with flowers of a size and brilliance not to be equalled anywhere. Cuckoo Flower was hardly out; in gardens were many primroses, primulas, and bluebells.

The next day, our hopes of arranging a trip to Foula falling through, we set out for Noss. The pastures and peat marshes between Bressay church and Maryfield were bright with spring vegetation, mostly sonsed in running water—*Caltha* grew everywhere and yellow *Iris* (not in flower) filled the ditches. Among the grass *Scilla verna*, *Polygala*, *Cardamine*, Thrift, *Pedicularis sylvatica*, *Orchis praetermissa* var. *pulchella*, *Eriophorum vaginatum*, *Potentilla erecta*, *Trifolium pratense* and *repens*, *Galium saxatile*, *Viola Riviniana*, and Primroses were all in flower. A bee line from Maryfield was made to Brough Loch over dry Heath on deep peat, on the lower parts of which small *Thalictrum alpinum* grew. *Calluna* was dominant and *Anthoxanthum odoratum* certainly sub-dominant. It is an extraordinary fact that this grass which, as Sowerby says, occurs " on the most exposed mountain ranges, forming part of every natural meadow, and forming tufts in the more secluded woods," should be so abundant here besides being a common grass of our meadows. Near Brough Loch the ditches were quite bright with luxuriant *Philonotis fontana*. Ullins Water gave us our first sight of Richardson's Skua and Eider Duck which, with innumerable gulls, were busy washing themselves. A tiny Peat Marsh nearby produced *Ranunculus acer*, var. *Steveni* and *Carex Goodenowii*, and on the roadside grew *Cerastium vulgatum*, var. *alpinum*, in small quantity.

The first low-lying part of the island of Noss consisted of quite good Pasture and Grass Heath, a large number of sheep being kept here. The gently sloping part of the main island was, however, dry Heath mixed with grass, including much *Anthoxanthum* and *Orchis maculata*. Here one could watch the nesting birds to much greater advantage actually than on the cliffs as one could approach them extraordinarily closely, take photographs easily, and study the " territory " problem. Great Skuas were plentiful and fierce, and are increasing here owing to protection.

Near the Holm of Noss I nearly fell into a hole which suddenly yawned beneath me. Eventually wriggling in I found a curious damp-rock or cave Association of ferns including *Dryopteris aristata* and *Blechnum*. The flat top of the holm would have been pink with Thrift if the Great Black Backed Gulls had not been so numerous.

Climbing up the steep slope along the precipice edge to the Noup, one saw a good example of an Association "indirectly consequent upon marine erosion," that is, one much subjected to the salt sea spray which in winter storms must soak the cliff tops, namely, Halophile Mat, as dense and flat as any alpine mat of turf formation.

Plantago Coronopus and *maritima*, var. *lanosa*, minute, purple *Cochlearia officinalis*, Thrift, *Cerastium tetrandrum* and *Polygala* formed almost exclusively the population of this very well marked Association.

The Sea Cliff plants examined through field-glasses seemed few in species but brilliant in flower, especially the magnificent *Lotus corniculatus*, forma *grandiflorus*. This plant, if it could be depended upon to remain true, would make a first-class rockery plant. The size of all its parts is several times greater than that of the usual form and the yellowness of the flowers is as deep and rich as could well be. *Lychnis dioica*, var. *zetlandica*, strikes one as being almost of specific rank, being quite a sub-alpine type of plant, short, thick and very viscid. *Cochlearia officinalis* literally luxuriates in small heaps, and is the dominant plant.

From the summit of the Noup, at 600 feet, on this perfect evening, with a calm sea and blue sky, the view was entrancing, more especially on account of the quickly changing light effects upon the intermingled sea and land.

To the South West Sumburgh Head was mainly suffused in silvery light before the evening sun; to the North West soft, dark purple bands of coastland and promontory alternated continually with narrow, glistening streaks of sea and voe, and to the North the vision was entrancingly clear over the many islands to Fetlar, Yell, and the Out Skerries.

The next day, Foula plans being again delayed, was spent fishing on Tingwall Loch. This valley was the most fertile land we saw, having beautiful, thick, green pastures on all its lower slopes. On the west side of the lake the pastures reached the actual water's edge in most places, there being little Reed Swamp vegetation. In the wet grass by the water's edge grew a curious mixture of pasture plants, weeds, moorland, marshland, (three) woodland, and (one) coast plants, as follows:—*Anthoxanthum*, *Cardamine pratensis*, *Lotus corniculatus*, *Orchis maculata*, *Potentilla Anserina*, *Plantago lanceolata*, *Rumex* sp., *Cerastium*, *Taraxacum*, *Rumex Acetosella*, *Carex pilulifera*, *Potentilla erecta*, *Viola Riviniana*, *Alchemilla minor*, *Caltha*, *Ranunculus Flammula*, *Iris*, *Spiraea Ulmaria*, *Geum rivale*, *Primula vulgaris*, *Chaerefolium sylvestre*, *Luzula sylvatica*, and *Scilla verna*.

On the little island in the lake, once the site of the ancient "Ting" or parliament of Shetland, grew a thick luxuriant growth of heather and *Luzula sylvatica*, and below it masses of primroses in full flower and *Geum*. Returning late in the evening over the ridge east of Asta Loch, the view obtained from the top was the second best seen in Shetland. Beyond Scalloway appeared a veritable archipelago of purple land and silver sea, and far away beyond in the sea was the great outline of Foula!

The next day, abandoning all hopes of getting to Foula, we started north by the "Earl." After a delightful voyage, during which we called at Out Skerries where we noticed a distant wave-lashed rock completely pink with Thrift, we disembarked with camping outfit at Uyea Sound in Unst and motored to Burrafirth.

Though not marked in our map, the road takes one as far as the coastguard's station on the west side of the firth. Pitching camp by the little bridge which spans the stream from Loch Cliff, we soon had a peat fire going and spent a comfortable night.

At six o'clock we were out fishing in the loch for breakfast. I never remember a morning quite like it. The atmosphere was so clear that it was hard to judge distance; it was mild and yet fresh in a delightful way; there was no breath of wind and the only sound was the regular roar of thousands of kittiwakes all rising off the loch together to circle and resettle. While camping we found ourselves sleeping very little owing to the continuous light, and yet we were never overtired, thanks to the wonderful air.

Round our camp was a small, flat area of pasture, but all the slopes and higher parts were Heath, with Moor intermingling on the plateaus.

By our camp was one small field of barley stubble which was made quite bright with the largest flowered form of *Viola tricolor* that I have seen, namely, *V. variata* Jord. Bordering the stream and lake was a fairly large marshy area of Peat Marsh Association, with Bog Bean dominant and *Equisetum* nearly so. The latter consisted of three species intermixed—*sylvaticum*, *arvense*, and *palustre*.

At the invitation of Mr Smith, the R.S.P.B. Watcher, we shouldered the necessaries and walked up Hermaness to the Watcher's Hut and spent the night there most comfortably. The plateau land of this high North-west side of Unst is mainly Moor, very boggy with much Sphagnum and numerous tarns, but Hermaness Hill itself and the drier slopes on either side consist of Heath and Grass Heath terminating on the cliff edges with Halophile Mat, as at Noss. Of course, all these Associations run into each other more or less gradually and are entirely dependent upon the configuration of the ground. The degree of exposure on the upper slopes at 600 feet is sufficient to form in places Subalpine Heath (closed) with *Vaccinium Myrtillus* and *uliginosum*, or *Carex* and moss dominant; also Subalpine Grass Heath (open) on the actual summits and ridges, where *Agrostis* or *Plantago* are usually the dominant plant. Both of these Associations descend in places to 200 feet altitude, where exposure is great and soil thin, and are reported by West (*l.c.*) at this level on the serpentine round Baltasound.

The grassy mat on the sloping edge of Hermaness facing Muckle Flugga was even more compact and smooth than at Noss, and it was delightful to lie upon it, high up, facing the wind, and gaze out over the sea on three sides, unbroken by a single sail. A glorious place this most northern point of our Isles!

With some palpitations we descended a steep gully down the cliff where footholds were rotten from rabbit and puffin-holes and came to a chaos of tumbled rocks and huge stacks.

The birds here were in incredible numbers and variety and it was possible to photograph the Fulmar nests. Big grey seals also appeared and disappeared.

The rock plants were not as luxuriant here as at Noss and one missed the brilliant *Lotus*, but *Cochlearia danica* was widespread on mud and rock, also *Cerastium tetrandrum* and a little Thrift. Below tidemark was a quantity of olive *Porphyra vulgaris*.

The next day we started out over the plateau and watched a large number of Great Skuas congregated by a small tarn most obviously bored with life. We could approach them quite near and they still remained bored, so they obviously were not interested in nesting activities as were all the others on the hill. The theory, since submitted by my brother in "Discovery," that these were a surplus male population has led to some discussion.

Crossing Libbers Hill we explored the valley wherein lies North Water. The higher rocks here were rich in *Silene acaulis*, var. *exscapa*, and in sheltered crannies grew *Polypodium vulgare*, var. *breve*, and minute *Aira praecox* about 2 inches high. We returned that evening to our camp at Burrafirth.

The wind had been rising all day and we had only just time to cook dinner on a roaring peat fire before a gale from the North-east, the like of which I have never experienced in England, smote us. Somehow our tent held, but the night hours were deafening! In the morning the storm was unabated. The sea in Burrafirth was white with spray which dashed high up against the rocks of Saxavord, our stream was brimming over, and we made haste to a kind crofter, Mr Mathieson, nearby for shelter. Somehow we transported ourselves along a now partly flooded road to Baltasound, where, at the Nord Hotel, we were made most comfortable.

All that day the storm blew with unabated fury, and it was said by the natives to be the worst for twenty-five years. The curious thing was that it did not reach England and even at Lerwick it was not severe.

The next day was bright and still, but the ground was waterlogged. We walked, via Loch Watlee, over rather dull Heath to Uyea Sound, where we hired a launch to take us to Yell. On the way we stopped at a certain spot on Fetlar to nest where the shore was entirely possessed by *Potentilla Anserina*. Crossing thence to Yell we had a wet time from spray and rain. Having put up at comfortable lodgings at Mid Yell, we rested and made the acquaintance of Mr Inkster and his hospitable family. He described to me a place near where, in an exposure of the peat, lay some 3 feet down a dense layer of horizontally embedded wood. He produced some pieces, one having obviously birch bark attached, and another piece, some 6 inches in diameter, has been identified at Kew as willow. He apparently knew every inch of Yell, and the only trees he knew were some willows at Vatsetter; birch he had never seen alive.

The next day we spent the morning trudging to a place in the centre of the island, a spot too desolate even for sheep, where we found Whimbrel nesting. All this higher land was a combination of heath and moor with much Sphagnum. Motoring on to Ulster, we took a launch across Yell Sound, to my mind the prettiest bit of seascape in Shetland.

The many islands (all with such fascinating names) dotted about and the smooth sea made us long to linger here, and in fact we did so. Noting a small loch marked in our map on Samphrey Island, and my brother remarking that small isolated lochs and especially islands in these were certainly the best places to look for nests, we decided to concentrate on these in future, both for plants and birds, and promptly put in to Samphrey. Some unknown duck of two species flew off the little loch on our approach, but the flora was poor, the snore, however, producing *Montia fontana*, *Sagina maritima* and *Stellaria apetala*. Landing at Mossbank, we motored through the pretty undulating country of Delting to Hillswick.

The next day we assigned to Ronas Hill and as much of North Roe as we could cover, and with phenomenal good fortune it turned out a most glorious, almost cloudless day! Motoring to Heylor, we crossed Ronas Voe and started up the steep slope of Ronas Hill.

The plants were almost entirely of the Subalpine Rock (crevices) Association, and besides grasses, *Dryopteris aristata* and *Dryopteris*, *Luzula pilosa* (one plant), *Solidago Virgaurea* (one plant), and a Mountain Ash were noted. The latter grew on a precipice quite out of reach of sheep and was the only one we saw in Shetland, hence I imagine its rarity is entirely due to sheep grazing.

At about 500 feet the steep rock and scree ascent was temporarily broken by a small plateau or dip of no great depth but with a sufficient accumulation of soil and moisture to support a fairly dense vegetation. This was the first definite Subalpine Heath (closed) Association to be met with, but it appeared to be a very much more luxuriant type of this very variable Association than that generally met with owing to its relatively favourable situation. The distinctive features of this Association, differentiating it from Heath, are paucity of *Calluna* and larger number of species.

Vaccinium Myrtillus was dominant and quite a foot high, other suffrutescent species being *Vaccinium Vitis-Idaea*, *Arctostaphylos*, *Calluna*, and herbs—*Viola canina*, *Carex pilulifera* and *pulicaris*, *Deschampsia flexuosa* and *Agrostis capillaris*.

This same Association at lower altitudes in exposed situations in Unst and elsewhere shows a more alpine type with no *Vaccinium* and a large proportion of *Grimmia* and some 20 per cent. of *Calluna*, with *Eriophorum* and *Empetrum* added.

Ascending again from the dip, at 900 feet, a curious flat, stone-covered slope was reached in which there was barely a tenth of space available for plants. The stones were all small, flattish, and quite regularly distributed. Slightly below this area at 800 feet commenced the first open community—Subalpine Heath (open), which, though differing only slightly from closed Subalpine Heath elsewhere, presents a very different aspect to it here. This Association extends here from about 800 to 1000 feet, mostly over the flat stony ground, and at this spot seems to be entirely dominated by *Empetrum*, here completely prostrate, practically the only other plant visible being *Lycopodium Selago*. At 1000 feet, though the stony ground appeared just the same, the vegetation changed fairly gradually in composition, though not in general aspect. In other words the flora became richer owing to the presence of true Arctic-Alpine species. It was curious to note this change at 1000 feet which seemed to occur for no apparent reason except that of the adaptability of these species to the conditions here prevalent in the zone above 1000 feet and their inability to compete wth the *Empetrum*, *Vaccinium*, etc., below.

From here on to the summit at 1475 feet, the following plants, in varying proportions, possessed what soil there was :—*Loiseleuria procumbens*, *Salix herbacea*, *Antennaria dioica*, *Lycopodium alpinum* completely replacing *L. Selago*, *Alchemilla alpina*, lichens and moss. On the actual summit a curious *Plantago* with leaves in dense rosettes, having their bases clothed in white hairs, was completely dominant. It has been named provisionally *P. maritima* var. *lanosa*. Other plants were *Thymus* sp., probably *zetlandicus*, *Viola canina* (common on the summit), *Agrostis capillaris*, *Molinia caerulea* and *Nardus stricta*. The vegetation of this highest zone may be classed as Lichen Heath as the lichen in so far as it was not confined to the stone interstices could be regarded as the true dominant.

The view on such a perfect day was wonderful, and I doubt whether many people have been so fortunate as we were. You could see the whole of Shetland—to the S.W. Papa Stour and Sandness and beyond Foula with its great 1000 feet cliffs, to the S. Fitfull Head and faintly beyond Fair Isle, further E. lay Noss, the Deltings and Out Skerries. Immediately below lay the wild dark loch-strewn country of North Maven, and to the E. the most beautiful island-dotted Yell Sound, each island a green streak upon a blue ground. Yell looked flat and dull as it is, but to the N.E. was visible the N.W. end of Unst with its wild cliffs ending in Hermaness, where we could see through glasses the exact spot of the lone watcher's hut.

Continuing north the curious North Roe country lay beneath us, ending in Uyea Island and Fethaland. It was an entirely wild and uninhabited plateau consisting of a complete maze of lakes of all shapes and sizes. There was no track of any kind and a compass was necessary. The curious rounded rocky outlines of the innumerable little hillocks, presumably due to glacier action, made the scenery almost weird.

While resting by a small loch we watched a Common Gull (the least common of the gulls) guarding two nestlings on a tiny island in the loch, and were reminded of the idea to examine all such islands. As in this case the idea of a swim was not welcome, we divided without losing touch in search of more islands. Eventually, on a signal, I rejoined my brother at a small loch near Sandy Water to find that he had waded some fairly deep water and was engaged in photographing a

Red-throated Diver sitting on its nest on the water's edge of a small island. Scanning the vegetation with glasses, I spied an undoubted shrub, but my brother had already secured a branch and was returning with some difficulty through the cold water. It was *Betula pubescens*! I have searched herbaria and made enquiries but cannot find any specimens from Shetland nor any definite record of it there.

T. Edmondston (*Ann. Scot. Nat. Hist.*, 1907, 234) quotes his father as saying—" no indigenous trees are to be seen, if we except a few dwarf bushes of birch, willow and mountain ash." and in *Ann. & Mag. of Nat. Hist.*, 1841, 294, he mentions " *Betula alba*—shady banks, not common." He also mentions Birka Water, not half a mile from where we were, and Birka Vird, a hill in North Maven, adding—" whether the birch still lingers in Shetland is at present uncertain."

Betula pubescens appears to be the commoner species of the two in the Highlands. It is recorded from but rare in Orkney, absent from the Faroes, probably present in Iceland and Greenland, as the hybrid *pubescens* × *nana* (*intermedia* Thom) is found in both places, and represents the tree limit at North Cape in latitude 70°. It is common in the peat of Shetland, especially in Yell.

It is mentioned by Warming (together with *Pinus*) as the commonest tree to commence the formation of Scrub Forest (Bushland Forest, Forest Moor) out of Heath and Moor.

Lawrence Edmondston knew of it as growing in a few places, so it seems not to have been so practically extinct in his time as it is now.

Obviously sheep, ponies, and firewood cutting are responsible for the virtual disappearance of this last remaining species which is capable of prolonging the development of Heath into Scrub Forest. Here was a last survivor, isolated on its island and safe from sheep!

Following on north, near Birka Water, was found one small patch of *Juniperus sibirica*, then nothing of interest appeared as we traversed the undulating Heath which gradually passed into Grass Heath as we neared the north coast. From a hill near Inniscord Loch we obtained a glorious view from Unst to Uyea Island over delightful grassy downlike land, the best pasture land we saw. Below lay a tiny settlement of crofters' houses at Uyea, but how the people got there was a mystery as it was three miles from any road.

Reaching the coast at South Wick, we followed it south again, pausing to watch the seals, innumerable by the waterfalls, and returned by the west shoulder of Ronas Hill very late and tired.

The next day, hearing of a possible chance of getting to Foula, we motored early to Scalloway, but alas, the wind was up again, as also was our time.

We spent the day in a launch and explored a part of West Burra where the population live a hard and primitive life and where we saw the curious straw chimney stacks on the crofters' cottages. Finally South Havra was visited, but it provided only a deserted village.

BRAMBLE NOTES, 1928.

WM. WATSON.

When describing a few little-known, hairy-stemmed brambles last year I left over a few for further enquiry. I am glad to be able to deal with two of these now. One of these I first gathered in Whitcliffe Wood, near Ludlow, Shropshire, in the autumn of 1925, and as I could not identify it I obtained seeds and grew several bushes of it in my garden. These flowered in 1928, and I have made the bramble out to be *R. sciaphilus* Lange (non Foerster). Rogers has a brief note about this on page 37 of his *Handbook*, but an adequate description of it in English is, I believe, wanting. I therefore give a description of my bushes.

R. SCIAPHILUS Lange.

Stem glaucescent, green to fuscous, low-arching, obtuse-angled, with patent simple and clustered hairs, many sessile and a few shortly stalked glands. Prickles numerous, moderately strong, slender, hairy, patent or declining, falcate, a few curved or hooked at the tip, subequal on the angles of the stem, a few short gland-tipped prickles on the sides. Stipules linear lanceolate, ciliate, with a few stalked glands below and sessile glands above; inserted close to the base of the pulvinus. Leaves mostly quinate, pedate, firm; on the upper surface hairy, greyish-green and opaque; on the under surface pale green, softly shortly hairy, with prominent veins; with broad ovate-crenate teeth ending in yellow mucros, some with a smaller tooth on the back. Petiole long, pale grey-green, pubescent, beset with rather weak, slender, long-based, patent, deflexed or falcate, yellowish prickles. Terminal leaflet rather large, ovate or obovate, gradually narrowed to an acuminate point; base cordate. Intermediate leaflets with an oblique, cordate base. Flowering branch green to fuscous, angled in the centre, pubescent, weakly but densely armed with curved yellow prickles, some straight or nearly straight, and with a fair number of glandular acicles. Panicle pyramidal with about two simple leaves, ending in 4-5 single-flowered patent branches, each subtended by a fuscous trifid bract as long as the pedicel. The upper part of the panicle bears sessile, sub-sessile, and occasional (unequal) stalked glands, glandular prickle-bristles, and glandular prickles. Flowers pinkish then white, one inch across. Petals narrow obovate, much tapered below, sinuately truncate at apex, incurved. Calyx light green with linear points, pubescent-hairy, aciculate and copiously glandular; the segments patent with tips half-erect during and after flowering, erect on the fruit. Stamens white (going pinkish), erect, a good deal longer than the yellowish green styles. Anthers glabrous. Fruit oblong. Young carpels glabrous. Receptacle very pilose.

One wonders why this has been associated with *R. gratus*. On the Continent it occurs in Denmark in Sleswick-Holstein and in Hanover, always, apparently with pilose anthers. In spite of my plants having glabrous anthers the correspondence is too close to refuse to identify them with the Dano-German bramble. A small-leaved variety growing in Seal Chart, Kent, has anthers decidedly pilose, however.

R. POLIOCLADOS spec. nov.

Another bramble which I have studied several times and which is usually still in flower in October, I am still unable to find described or named. It is abundant in several places in Epping Forest between Chingford and High Beech. It looks intermediate between *R. ulmifolius* var. *vulgatus* and *R. vestitus*, but nearer to the former. *R. polioclados* sp. nov. Stem stout, arcuate-procumbent, rooting at the tip, angled, striate, sides concave, with short, clustered hairs and a few stalked glands; conspicuously glaucous. Prickles robust, broad-based, mostly patent. Leaves quinate, smallish, glabrous above, closely white-felted and pubescent beneath; all the leaflets of nearly the same size, with a notched base; petiolules of the basal leaflets about 5 or 6 mm. long. Petioles, with several stalked glands, and with strong, unequal, hooked prickles (some bearing glands), crowded towards the apex of the petiole. Stipules inserted towards the apex of the pulvinus. Terminal leaflet oblong-obovate, cuspidate, with compound, broad teeth on the truncate apex, and patent teeth on the sides. Panicle cylindrical above, with long ascending branches below; rachis flexuous, angled and furrowed, villose and felted, with many rather strong falcate and hooked prickles, and a fair number of stalked glands. Petals white (faintly pinkish in bud), small, suborbicular-cuneate. Stamens white, of the same length as the green styles; anthers pilose. Calyx whitish-felted and pubescent, unarmed; segments mucronate, permanently reflexed after flowering. Young carpels very pilose. Fruit small, globose.

R. lasioclados Focke differs in its shaggy, sub-glaucous stem, its much larger flowers with long stamens, its broadly oval or sub-orbicular, finely sharply-serrate, terminal leaflets, and its more slender prickles; it is also less glandular.

R. SCANICUS Areschong.

R. Leyi Focke (nomen prius)? The occurrence of this bramble in Britain has not previously, I believe, been reported. On the 14th July 1928 I met with it on Netley Heath, Surrey, growing in abundance under bracken and apparently much starved. Some of the previous year's stems retained the old leaves and were rooted at the tips. As it was then only just coming into flower I revisited the spot on the 9th August to complete my observations. These I reproduce below.

Stem purple brown, low arching, and shortly procumbent, slender, sub-cylindrical below, rather bluntly angled above, striate, pilose, slightly pruinose, and with an occasional stalked gland. Prickles subequal, broad-based, short, slender, slightly deflexed (curved on the upper part of the stem), fairly numerous. Leaves flat, 3-5-nate, pedate, unequally coarsely somewhat doubly serrate, pale green; glaucescent and slightly strigose above; rather softly hairy with shining hairs, the brown veins pectinate beneath. Petioles densely patently pilose, with falcate prickles and a few sunken stalked glands; stipules linear lanceolate, glandular. Terminal leaflet sub-orbicular or broadly oval, shortly broadly gradually pointed, base emarginate, 3-4 times as long as its petiolule. Basal leaflets of the quinate leaves with stalks 2 mm. long. Flowering branch flexuose, sharp-angled, felted and densely patently hairy, with 3-nate leaves and several simple roundish cordate leaves above, but not to the apex. Usually one of the lower 3-nate leaves has a very round terminal leaflet. Prickles rather many, crimson based, straight or falcate, declining, short. Panicle cylindrical, moderately developed; the lower branches half erect, 1-7 flowered, remote; the upper branches approximate, short, in a close ultra-axillary head, 1-3 flowered. Peduncles and pedicels patently hairy, with scattered stalked glands scarcely exceeding the hairs, and with nearly straight subulate prickles. Upper bracts lanceolate or trifid, glandular, conspicuously ciliate. Flowers small, opening flat, and the petals at length rolling back at the sides. Petals pink, sub-orbicular, abruptly clawed. Calyx segments greenish grey inside and out, villose and felted, glandular, ending in linear green tips; patent during and after flowering, erect on the fruit. Stamens white (becoming red), spreading throughout, hardly as long as the greenish styles, for the most part a good deal shorter; anthers glabrous. Young carpels pilose; receptacle pilose.

I have seen specimens of the Scanian bramble collected by Elmquist, Lidforss and Gustafsson. I have used the name *R. scanicus* as I do not think that either the Surrey or the Scanian bramble is quite the same as the earlier *R. axillaris* of Lejeune, as Sudre and Friderichsen state; and still less that they are the same as *R. chlorothyrsos* Focke, as Focke would have. *R. axillaris* is described as having white elliptical petals and as flowering in June. *R. hirsutissimus* Sudre & Ley, which grows at Netley Heath close to *R. scanicus* and resembles it closely in many respects, would fit Lejeune's description of *R. axillaris* so far as that goes. From Focke's description of *R. Leyi* I should judge it to be identical with *R. scanicus* were it not for the fact that Focke failed to recognise the identity. I have not seen specimens of *R. Leyi*.

R. scanicus is known from S. Sweden and Denmark and, if *R. Leyi* is the same, from the German Ardennes close to the Belgian frontier.

R. CHAEROPHYLLUS Sagorski & W. Schultze.

This is another bramble which has not yet, I think, been reported from Britain. I have studied it in three successive years in the Forest of Blean, Kent, and have recognised it as belonging to the same species as specimens labelled "*R. Gelertii*," coming from Sprowston and Mousehold Heath, Norfolk. A description follows.

Stem at first erect then low-arching, elongate, brown to deep purple, shining after losing the thin pruina which at first covers it, blunt-angled, flat-sided, striate, nearly glabrous. Prickles very unequal, the larger robust, slightly deflexed. Leaves yellowish green, 5-nate, leaflets contiguous, with short shining hairs on both sides, but so plentiful beneath at first as to make the leaf almost felted. Terminal leaflet ovate oblong, gradually tapering into a long point, broad across the base and subcordate, irregularly inciso-dentate or doubly dentate, three times as long as its petiolule. Basal leaflets with petiolules 3 mm. long, not quite centrally inserted. Petioles blackish purple, shallowly furrowed below, convex above, villose, bearing falcate prickles. Stipules red, broadly linear, glandular towards the tip. Flowering branch purplish, zig-zag, subterete and glabrescent below, rendered angular above by three lines running down from each petiole. Prickles numerous, unequal, the larger slender and curved, with a long crimson base. Panicle pyramidal, lax, thinly pubescent and pilose with rather numerous, mostly sunken, stalked glands and acicles. Leaves large, ternate or simple, concolorous, pubescent beneath. Terminal leaflet elliptical, coarsely serrate, with a long acuminate point. Lower branches widely ascending, very long and compound; upper branches nearly patent, branched near their apex to form 7-flowered cymes. The shortly stalked terminal flower overtopped by the 2-3 flowered branches below it. Flowers rather large, opening widely. Petals narrow obovate, much tapered to the base, pinkish. Calyx segments greenish grey felted, with a white margin, dotted with short-stalked glands, tapered into short purple tips, loosely reflexed in flower, rising to patent as the fruit forms, but at length again more or less reflexed. Stamens white, slightly longer than the green styles; anthers glabrous. Young carpels glabrous. Receptacle pilose. Fruit globose to oblong, abundant.

In habit this bramble takes after *R. sulcatus*, and in fact grows with it in the Forest of Blean. It is not altogether identical with the type, as that is said to have white flowers, a grey calyx and densely hairy carpels. Several forms have been described and named on the Continent, examples which I do not propose to follow as our bramble lies very near the type. The Norfolk bramble has hitherto been left under *R. Gelertii*, although Focke withdrew that name on seeing further material almost as soon as he had suggested it. Friderichsen puts *R. chaerophyllus* next to *R. Gelertii*. Dr Focke was therefore as near right as it was possible to be in 1887, when he said " near *R. Gelertii*;" *R. chaerophyllus* not being described until 1894.

This is predominantly a Central European bramble, but is known also from isolated stations in N.W. Germany and Belgium.

R. MONTANUS Wirtgen.

For several years I have cultivated a bramble which occurs on commons and in woods in N.W. Kent, N.E. Surrey, and S. Essex, and which has been known as *R. lentiginosus* Lees, forma. It agrees very imperfectly with Lees and Babington's descriptions (*Phyt.*, 1853, pp. 927-8; *Journ. Bot.*, 1896, p. 286). I have drawn up the following notes from dried specimens of Lees' bramble from Capel Curig and from Whixall Moss to supplement Lees and Babington, and in order the better to show the differences in the home counties' bramble.

Lees' bramble. Stem and prickles purplish, the prickles very long and sharp, occasionally a stalked gland and pricklet. Petioles very long, furrowed, bearing large falcate prickles and narrowly linear stipules fringed with long-stalked glands. Leaves light green with 5-7 leaflets, the intermediate leaflets standing off at a sharp angle, *i.e.*, somewhat erect. Terminal leaflet ending in a long, narrow, sharp, acuminate point. Basal petiolules 2 mm. Teeth double, rather coarse, very sharp. Hairs on the veins on the underside of the leaves and on the petioles long. Flowering branch villous to the base, densely villous above. Pedicels with some ascending and some appressed hairs, and occasional stalked glands. Bracts with stalked glands on the margins. Prickles crimson-based. Leaves greyish-felted beneath; terminal leaflets cuneate-obovate-lanceolate. Petals broad, obovate; anthers pilose. Calyx densely felted and pilose all over, with sub-sessile glands and a few stalked glands, very aciculate below; segments triangular, attenuated into long narrow purplish tips, erect on the fruit.

I believe that this bramble of Lees is identical with *R. montanus* Wirtgen (including *R. heteroclitus* Wirtgen), for which an earlier name, earlier also than *R. lentiginosus*, is *R. senticosus* Koehler.

R. NITIDIOIDES spec. nov.

In our robust home counties' bramble the stems are sub-erect, springing up about three inches apart in a clump, ending in the air and therefore not rooting at the tips; but if the stem is solitary it branches early, droops and sprawls along the ground, and in autumn the tips root in. By November all except the most recent leaves have been shed. The stem is ochreous green, becoming speckled and blotched with red-brown, with angles obtuse and sides flat to slightly furrowed above, with a few solitary short hairs, many yellow or red (ultimately black) sub-sessile glands, but no long-stalked glands and no acicles. Prickles numerous, scattered, at first yellow, a little longer than the diameter of the stem, subulate lanceolate from a swollen base below; above mostly on or near the angles, tending to be in groups, declining or falcate, unequal, with resistant tips, at length red-brown in exposed situations. Leaves a medium green, subdigitate, plicate; margin red, slightly undulate, with unequal, rather incise broad and blunt mucronate teeth; upper surface glaucescent, with crowded sessile yellow glands, shortly strigose, glabrescent (midrib, however, remains pilose); under surface pubescent all over, the pubescence on the midribs and veins partly patent, partly directed forwards, midribs and veins somewhat pectinate at the base of the leaf. Petioles pubescent, and with short ascending hairs, sulcate towards the base; stipules broadly linear with a few sub-sessile, but no conspicuously stalked glands. Petioles, petiolules, and midribs with many strong but not large hooked prickles. Terminal leaflet oval, base entire or slightly indented. Intermediate leaflets widely spreading. Basal petiolules 3 mm. All leaflets smallish, with broad short points. Flowering branch cylindrical, glabrescent below; angled and striate, thinly villous and pubescent above; with some quinate leaves below, the terminal leaflets rounded oval, acute; leaves not felted beneath. The strong lower panicles pyramido-corymbose, with very long, half-erect, leafy lower branches, and a closely branched top: the upper panicles cylindrical, broad and lax. Terminal flower-stalk of the rachis and its racemose branches—at any rate the lower branches—up to 1 cm. long, over topped by the one or two 1-7 flowered branches next below. The panicle has numerous more or less curved prickles and sub-sessile glands. Bracts with sub-sessile, but no conspicuously-stalked glands. Pedicels with semi-appressed and ascending hairs, sub-sessile glands, and many falcate intensely yellow prickles up to and on the base of the calyx. Calyx shining green and sub-glabrous on the back, aciculate, with greyish felted and pilose margins and with sub-sessile glands; the segments oval obtuse with linear, leafy, cuspidate tips, loosely reflexed after flowering, later more or less patent, rarely partly erect. Flowers rather large, incurved, petals crumpled, oval, lilac; stamens white or pinkish, slightly longer than the yellowish green styles; anthers glabrous. Carpels glabrous. Receptacle pilose. Fruit unusually large (resembling the fruit of *R. Selmeri*), perfect; oblong with drupelets of unequal size.

I think this bramble stands nearer to the Suberecti than Lees' bramble does. It recalls *R. nitidus* more especially, and on this account, and as I think the time has come when it must be kept distinct from Lees' bramble, I name it *R. nitidioides* spec. nov.

R. ORTHOCLADOS A. Ley.

Another English bramble which has passed for a form of *R. lentiginosus* I have seen from several localities in W. Sussex, viz., Ambersham Common (E.S.M.), Lavington Common (E.S.M. & E.F.L.), and Graffham to Heyshott (E.F.L.). Sudre basing himself on a specimen of Linton's from Graffham has named this *R. opacus*, var. *glandulifer*. I am inclined to think, however, that this West Sussex bramble is none other than a sunny form of A. Ley's *R. orthoclados*. It is vastly different from *R. nitidioides*. The stem is deep red, sub-glabrous, somewhat glaucous, sharp-angled, bearing a few very short finely-stalked dark-headed glands and a few short equal acicles. Prickles rather few, spaced out, patent or nearly so, short, slender. Leaves digitate, glabrous above (even along midribs), pilose on the veins beneath (not pubescent) becoming glabrous. Stipules purple, broad, with stalked glands. Terminal leaflet oval or oval-rhomboid, base entire, with a finely pointed long slender acumen, and rather coarse, spaced out, very unequal but hardly double, sharp, patent teeth. Panicle shortly, broadly, pyramidal with a broad, truncate or rounded top, and a long, compound lower branch; upper branches long, widely spreading, patent or slightly ascending; sometimes with many simple ovate or lanceolate leaves. Rachis slightly flexuous with conspicuous but short stalked glands exceeding the felt and adpressed loose hair. Panicle prickles short, straight, slender, deflexed. Pedicels armed and clad like the rachis. Petals white, ovate or obovate oblong, long clawed. Calyx segments green-felted with a grey edge, spreading or slightly reflexed then half erect or patent. Stamens longer than the styles; anthers glabrous. Fruit oblong, moderate in size. Ripe fruit not seen, and final direction of the calyx segments not therefore known.

R. INSOLATUS P. J. M.

On the 3rd July 1926 I collected specimens of a stunted bramble on Farnborough Common, Kent, and after a long chase I concluded that I had the hairy form of *R. insolatus* P.J.M. mentioned by Godron and Harmand under the name of *R. hirtus.* At the end of last year (1928) Mr Gustafsson, who had been on a visit to Müller's country, forwarded me specimens of *R. insolatus* from near Weissembourg, and I saw that, saving for the leaves being greyish-felted beneath and the whole bramble more hairy, my bramble was indeed *R. insolatus.* As Godron and Harmand describe their bramble as sometimes like this there seems nothing against the determination. *R. insolatus* is recorded in Rogers's *Handbook* as having been found on Shooter's Hill, Kent, about 8 or 9 miles distant from Farnborough Common. The stem is nearly procumbent, not glaucous, becoming deep purple, moderately villous, with very slender unequal, deflexed and falcate prickles, unequal but all short-stalked, dark red glistening glands, more unequal acicles and a few bristles. Leaves yellowish-green, nearly all ternate, plicate, with shining hairs beneath, and greyish felt on the upper leaves. Terminal leaflet oblong, shortly acuminate, cordate-based, toothed as in *R. Koehleri.* Flowering branch angled throughout, with numerous slender weak patent and deflexed prickles above, falcate below. Rachis flexuous, villous, the pedicels whitish-felted, armed like the stem, but with denser, more slenderly-stalked glands. Panicle shortly pyramidal, blunt, the branches 1-3 flowered; the topmost panicle leaves without any stalked glands on the upper surface, greyish-felted beneath. Flowers rather small. Petals obovate, almost white. Stamens white, erect, about equal in length to the reddish-based styles. The young carpels slightly pilose. Calyx greyish-green felted and with long shining hairs, crowded red stalked-glands, and acicles; segments ovate triangular, tapered into short points, reflexed at first then more or less patent. Fertile.

I believe there is an old record of "*R. Koehleri*, forma" for Hayes Common and "*R. hirtus* group, an unnamed plant" for Keston Common, by Rogers and Linton. As these commons almost adjoin Farnborough Common it is possible that the bramble in question may have been *R. insolatus*, which resembles both *R. hirtus* and *R. Koehleri*.

In glandular and prickle equipment this is not fully Koehlerian and should stand beside my *R. diversus* which, moreover, it resembles in its shining hairs and felted panicle leaves. It must not be confused with *R. rubiginosus* P.J.M.

HYBRIDS BETWEEN HABENARIA VIRIDIS (L.) Br. AND THE PALMATE ORCHIDS.

P. M. Hall.

Five plants of a hybrid between *H. viridis* and an Orchis were found by myself on Cheesefoot Head, near Winchester, on June 24, 1912. The hybrid has since then been referred to in several publications, with numerous changes in the parentage to which it has been attributed, but it has not as yet been named.

The plant was first published in *Rep. B.E.C.*, 179, 1912, as *O. maculata* × *H. viridis*, nov. hybr., and was described in great detail by the Rev. R. Quirk in the Winchester College N.H.S. Report for 1912-1913, being illustrated in the frontispiece by photographic reproductions of water-colour drawings. Mr Quirk tentatively referred the hybrid to *H. viridis* × *O. latifolia* L., but my opinion then was that it was a ternary hybrid *(O. maculata* × *O. incarnata*) × *H. viridis*. It must be remembered that *O. praetermissa* Dr. had not then been named and Ullman and myself were then calling that plant *O. incarnata*, form 2, while *O. maculata* then represented what is now known as *O. Fuchsii* Dr. The description and supposed parentage are referred to in the *Rep. B.E.C.*, 342, 1913.

O. Fuchsii Dr. was named and segregated from *O. maculata* L. in *Rep. B.E.C.* for 1914, and on p. 107 of that Report this hybrid is again referred to but the parentage suggested is now *O. Fuchsii* Dr. × *H. viridis*, while allusion is made to the possibility of its being a ternary hybrid.

The next reference to this hybrid is in the supplement to *Rep. B.E.C.* for 1917, and the parentage attributed to it, viz. (*O. praetermissa* × *O. Fuchsii*) × *H. viridis* is, I am convinced, the correct one. As a suggested ternary hybrid will naturally be viewed with great caution, it may be desirable to recapitulate the reasons on which this identification is based. These reasons are as follows:—

(1) It cannot be doubted from the description and illustration that one parent is *H. viridis* and the other a Palmate Orchis.

(2) The deeply-cleft labellum of one form of the plant and the occurrence of spots on some of the leaves indicate the presence of *O. Fuchsii* Dr.

(3) The deep tone of colour and hollow stems postulate the presence of a Marsh Orchis.

(4) *O. praetermissa* Dr. grows in this locality, and a plant which I believe to be the hybrid *O. Fuchsii* × *O. praetermissa* is not infrequent. Some botanists refer the latter plant to *O. latifolia* L., but reasons are given in another note for opposing this view.

(5) Thus not only do the three presumed components of the ternary hybrid occur together in this locality individually but the hybrid between the two *Orchis* components also occurs.

The plant first discovered in 1912 recurred in 1913 and, I believe, also in 1916 and 1917, but there appears to be no published name to which this hybrid can be referred. Camus in his *Iconographie* gives two bigeneric *Orchis* × *Coeloglossum* crosses, viz., × × *Orchicoeloglossum Erdingeri* A. & G. (*C. viride* × *O. sambucina*) and × × *Orchicoeloglossum Guilhoti* G. Camus (*C. viride* × *O. incarnata*), while Schultz gives the former of these two crosses only. The question of giving names to hybrids is a debatable one, but a large number of Orchid hybrids have been named in recent years and one of the objects of this note is to propose a name for this very distinct and interesting plant. If it be considered worthy of a name, I would suggest × *O. Ullmanii*. It may be pointed out here that the Orchid parent has itself been named and appears in the second edition of the *British Plant List* as × *O. Mortonii* Druce.

The other object of this note is to draw attention to the treatment of the *H. viridis* × *Orchis* hybrids in the *British Plant List*. The following are tabulated under *H. viridis*:—× *O. Fuchsii* Dr. (*mixta* A. & G.), × *O. latifolia* L. ?, × *O. incarnata* L., × *O. maculata* L. None of the foregoing coincides with the plant named by me above, although all might have been derived from the various incorrect attributions which have been published from time to time. As far as I can ascertain from a scrutiny of the B.E.C. Reports, the only other *H. viridis* × *Orchis* hybrid reported besides my ternary hybrid is the × *O. Fuchsii* cross.

In the 1917 Supplement, pp. 180-1, two forms of the supposed hybrid *O. Fuchsii* × *H. viridis* are referred to, being illustrated in plates 15 and 16. Comparing plate 16 with the frontispiece of the Winchester College N.H.S. Report for 1912-3, one is compelled to think that they are the same plant. As to the plant figured in plate 15, I can see in it no trace of *H. viridis* parentage, while everything points to the parentage *O. Fuchsii* × *H. Gymnadenia*. The shape and direction of the labellum fits *H. Gymnadenia* far better than *H. viridis*, and the narrow, dark, folded leaves are a pure *Gymnadenia* character. The spur is rather longer than in *O. Fuchsii*, whereas if *H. viridis* were present the spur would probably be shorter, sharply deflexed, and with a swelling at the apex. The colour of the flower is described as being similar to that of *O. Fuchsii*, whereas in other hybrids of *H. viridis*, both with *H. Gymnadenia* and with × *O. Mortonii*, the colour has a curious suffused greenish purple tint.

It is my opinion, therefore, that if the hybrid *H. viridis* × *O. Fuchsii* is included in the *List* on the strength of the plants found at Winchester in 1916 and 1917 and illustrated in the 1917 Supplement, it is incorrectly included, and the only hybrid which should be listed is that which I have named × *O. Ullmanii*. If, however, its inclusion is based on the *H. viridis* × *O. maculata* listed in the *London Catalogue*, 10th edition, and if the occurrence of that hybrid is properly authenticated, two *H. viridis* × *Orchis* hybrids and two only should appear in the *British Plant List*.

NOTES ON SOME HAMPSHIRE ORCHIDS.

R. B. Ullman and P. M. Hall.

On June 18, 1928, the Secretary, Dr Druce, and the writers of this note spent a day studying the Palmate Orchids in various habitats—meadow, down, water-meadow, and marsh—within a few miles radius of Winchester.

The first place of call was a damp meadow between Wickham and Shedfield, being close to Shedfield Common and adjoining the Bracklesham gravels. This meadow was expected to hold *O. maculata* L., as in fact it did. The only variation from the type was one group of three plants showing a tendency towards *O. Fuchsii* Dr. in the shape of the labellum.

From Wickham a move was made to Cheesefoot Head, a point on the downs south-east of Winchester, well known to all Wiccamical botanists. Here was a wonderful profusion of Orchids, principally *O. Fuchsii* and *H. Gymnadenia*. Among the *O. Fuchsii* were several specimens which from their deeper colour, label-shape, and very heavily spotted, sometimes " ring-spotted," leaves were clearly of Marsh Orchis parentage. The writers had fifteen years before frequently found *O. praetermissa* on these downs, but to-day only one specimen of undoubted type *praetermissa* was forthcoming after a long search. The other Marsh Orchids seen would appear to fall within the *O. latifolia* L. of some British botanists, but in the view of the writers none of the plants found exhibited any character not to be expected of hybrids of *O. Fuchsii* and *praetermissa*. These plants, which we believe to be hybrids, differ considerably from one another in detail but at the same time have some characteristics in common. Their colour approaches *O. praetermissa* and is deeper in tone than any *O. Fuchsii* present, so that it is easy to pick out a hybrid at a distance and say with confidence " that will be a hybrid." Secondly, the labella all have the faint lobing with the middle lobe slightly projecting so typical of *O. praetermissa*.

The scarcity of *O. praetermissa* on the downs was disappointing, but at the same time provided interesting food for thought. It may have been that owing to the lateness of the season *O. praetermissa*, though present, was not sufficiently developed to be recognisable, but this is most improbable, as no plants were noted with any resemblance to undeveloped *O. praetermissa*. Or again in this particular locality *O. praetermissa* may have had a bad season, though this was not the case in other places visited the same day. The scarcity of *O. praetermissa* to-day, in view of its comparative frequency in the same spot fifteen years before, prompts the suggestion that chance-sown plants of the type have been unable to persist in so unsuitable a habitat, whereas the hybrids with *O. Fuchsii* have persisted owing to their greater powers of resistance derived from their down-loving parent, *O. Fuchsii*. Many authorities from Webster onwards have noted that the hybrids of the British Orchids exceed their parents in vigour. If these plants, which we have called hybrids, are not hybrids but *O. latifolia* L., a marsh-dwelling species parallel to *O. praetermissa* Dr., is it not reasonable to ask why *O. latifolia* has not disappeared equally with *O. praetermissa?*

Variations from the type *O. Fuchsii* Dr. found here included one specimen of *O. O'Kellyi* Dr., discovered by the Secretary, and a few plants which showed a tendency towards *O. maculata* L. in the form of label. With regard to the former the writers retain an open mind. *O. O'Kellyi* as originally described as a species or sub-species occurred in great numbers to the exclusion of other forms, or at any rate in predominance, and it seems to us difficult, when you have a single variant growing among myriads of *O. Fuchsii*, to attribute it to another species. This must be said, however, for the identification, that this specimen was not simply an albino *O. Fuchsii*, as the flowers were distinctly smaller than any others seen. If this plant is to be identified with *O. O'Kellyi*, it would appear to be a N.C.R. for vice-county 11 (South Hants).

Considerable variation was noticed among *H. Gymnadenia*, individuals differing in stature, colour, shape of label and width of leaf. Several specimens were seen of the beautiful albino variety and one specimen was collected which was thought at the time to be a hybrid with *O. praetermissa* (*O. Wintoni* Dr.). The leaves were very wide and flat and rather pale green as compared with typical *Gymnadenia*; the flower spike was markedly bracteate, and the labella of the one or two open flowers were very untypical, having a projecting mid-lobe in the manner of *O. praetermissa*. The upper petals also were wide and rather similar to those of Orchis. Later, however, when the upper flowers opened in water, they were found to be typical, the lower part of the spike apparently being monstrous.

After passing through Twyford, where *Herminium* was seen in good show, the Itchen Water-meadows were investigated, first at Brambridge and then near Bishopstoke. In each case there was a good display of typical *O. praetermissa* and there were a fair number of apparent hybrids, in one or two spots even outnumbering *O. praetermissa*, but the Orchids were on the whole disappointing. Plants of the *maculata* group were very scarce indeed and not very typical, but tended on the whole to *O. Fuchsii* rather than to *O. maculata*. In addition to hybrid types very similar to those found on the downs, there were several very stout plants with "ring-spotted" leaves and labella heavily striped and diamond-shaped. The Secretary refers these plants to the *praetermissa* × *Fuchsii* rather than *praetermissa* × *maculata* cross, which is no doubt correct, as *O. Fuchsii* tends to be stronger in both leaf-spots and label markings than *O. maculata*. In fact, it was noticed in Cornwall this season that 50 per cent. of the *O. maculata* had unspotted leaves, while the normal labellum tends to be almost pure white with a faint wash of small lilac dots. It was, however, impossible to tie this "ring-spotted" plant down to a type, as each specimen varied individually, not within comparatively narrow limits as happens in the case of the species *praetermissa*, *Fuchsii*, and *maculata*.

A few specimens were found of *O. incarnata* L., but they were poor and stunted. One plant with dull purple flowers, rather narrow and very reflexed, was almost certainly attributable to the cross *O. incarnata* × *praetermissa*.

The next station to be visited was a boggy meadow opposite Ampfield Church. This meadow was noted by us in 1913 as the only station in the Winchester district where we found supposed *O. latifolia* L. without *O. praetermissa* being present also. But on this occasion the latter was very plentiful and typical. The most interesting feature of this meadow was that *O. maculata* and *O. Fuchsii* were found growing together in great abundance. The soil in this neighbourhood is sandy, and while the presence of *O. maculata* was to be expected the occurrence of *O. Fuchsii* was surprising. The explanation is presumably to be found in the fact that the water in this bog is probably derived from the Farley range of chalk hills lying to the north of Ampfield and still retains a sufficiently high lime-content to support *O. Fuchsii*. The following points emerged from a fairly comprehensive examination:—

(a) Although the two species were growing together there were only comparatively few intermediates. The impression conveyed was not of a single species varying very considerably in the direction of two extreme types but rather of two distinct species with occasional hybrids or intermediates between them.

(b) *O. maculata* was definitely earlier flowering than *O. Fuchsii*. The flower-spikes of the former were fully opened with the lower flowers going over while only the lower flowers of the latter were opened.

(c) The inflorescence of *O. maculata* was more cylindrical and less conical than that of *O. Fuchsii*.

Numerous *praetermissa* hybrids were found, and it would be possible to segregate with a reasonable degree of certainty the two crosses *praetermissa* × *maculata* and *praetermissa* × *Fuchsii*.

The most noticeable fact which arises from a survey of all the foregoing observations is this, that in every station visited *O. maculata* and/or *O. Fuchsii* was found and in every case individual specimens were found of the one species varying in the direction of the other. This fact, together with the circumstances under which the two species grow together at Ampfield, would appear to lead to the supposition that both have been derived from a common ancestor at a recent period, geologically speaking, and each has a tendency to produce reversions towards the common ancestor. On the other hand, the two species are sufficiently well fixed to be able to maintain themselves as distinct species when they grow together in conditions which permit the presence of both.

PANSY RECORDS.

Eric Drabble, D.Sc.

Since writing the last list of records (see *Rep. B.E.C.*, 191-204, 1926) a very large number of pansies have been determined. In the following list I alone am responsible for the naming; the collectors are mentioned in brackets after the localities.

CORNWALL (1, 2).

V. *agrestis* Jord.—Venton Ggymps (F. Rilstone).
V. *segetalis* Jord.—Callestick, Polperro (F. Rilstone).
V. *ruralis* Jord.—St Mary's Island, Scilly (Miss A. Dorrien-Smith).
V. *Lejeunei* Jord.—Lizard (G. C. Druce).
V. *monticola* Jord.—Sennen (E. Thurston).
V. *lutea* Huds.—Lands End (Tozer in Herb. Kew).
V. *lutea* Huds., f. *Pesneaui* Lloyd & Foucaud.—Par (E. Thurston).
V. *nana* DC.—St Mary's Island, Scilly (Miss A. Dorrien-Smith).

DEVONSHIRE (3, 4).

V. *agrestis* Jord.—Tiverton (G. Watts).
V. *Deseglisei* Jord.—Braunton (E. Wright).
V. *ruralis* Jord.—Silverton (G. Watts).
V. *Lejeunei* Jord.—Tiverton, Burlescombe (G. Watts).
V. *Curtisii* Forster.—Braunton Burrows, with particoloured flowers (W. T. Thiselton-Dyer, 1862).

SOMERSET (5, 6).

V. *Deseglisei* Jord., f. *subtilis* (Jord.)—Minehead (J. M. Brown).
V. *Lloydii* Jord.—Milton Clevedon (E. S. Marshall).

WILTSHIRE (7, 8).

V. *agrestis* Jord.—Aldbourne (Miss E. S. Todd).
V. *ruralis* Jord.—Aldbourne (Miss E. S. Todd).

ISLE OF WIGHT (10).

V. *agrestis* Jord.—Sandown (E. & H. Drabble).
V. *segetalis* Jord.—Totland (E. & H. Drabble).
V. *arvatica* Jord.—Newport (E. & H. Drabble).

HAMPSHIRE (11, 12).

V. *agrestis* Jord.—Swaythling (J. F. Rayner).
V. *segetalis* Jord.—Lyss (J. S. Gamble).
V. *ruralis* Jord.—Lyss (J. S. Gamble).
V. *latifolia* Drabble.—Poole (J. E. Lousley).

SUSSEX (13, 14).

V. *agrestis* Jord.—Chapel (J. E. Little).
forma *obtusifolia* (Jord.)—Racton (P. M. Hall).
V. *anglica* Drabble—Roundhurst (R. J. Burdon).
V. *Deseglisei* Jord.—Black Down (J. E. Little).

V. *contempta* Jord., var. *patula* Drabble—Crowborough.
V. *Lejeunei* Jord.—Hailsham (E. Bray).

KENT (15, 16).

V. *alpestris* Jord.—Clover field in Kent, May 1808 (Herb. Kew).
V. *Lejeunei* Jord.—Ightham (J. E. Little)

SURREY (17).

V. *agrestis* Jord.—Ashtead (C. E. Britton); Merrow, Headley (J. E. Lousley).
V. *segetalis* Jord.—Headley (E. C. Wallace, J. E. Lousley).
V. *Deseglisei* Jord., f. *subtilis* (Jord.)—Banstead Downs (E. C. Wallace).
V. *arvatica* Jord.—Hascombe (R. J. Burdon).
V. *ruralis* Jord.—Woking (M. Sanders).
V. *variata* Jord., var. *sulphurea* Drabble—Little Bookham (S. A. Chambers).
V. *contempta* Jord., var. *patula*—Shere (E. B. Bishop).
V. *monticola* Jord.—Gomshall (E. B. Bishop).

ESSEX (18, 19).

V. *agrestis* Jord.—Lexden (G. C. Brown).
V. *segetalis* Jord.—Southend.
V. *segetalis* Jord., f. *obtusifolia* (Jord.)—Saffron Walden (Miss B. Midgley).

HERTFORDSHIRE (20).

V. *agrestis* Jord.—Wilbury Hill (J. E. Little).
V. *Deseglisei* Jord.—Hitchin, Great Wymondley (J. E. Little); Hemel Hempstead (R. W. Butcher); Long Marston.
V. *Deseglisei* Jord., f. *subtilis* (Jord.)—Totteridge (E. & H. Drabble); Chorley Wood (W. R. Sherrin).
V. *ruralis* Jord.—Aldbury (G. C. Druce).
V. *latifolia* Drabble—Watford (C. B. Clarke, 1894).
V. *contempta* Jord., var. *patula* Drabble—Purwell Field, Hitchin (J. E. Little).
V. *Lloydii* Jord.—Norton (T. A. Dymes).

BERKSHIRE (22).

V. *segetalis* Jord., f. *obtusifolia* (Jord.)—Burghfield (J. E. Lousley).
V. *ruralis* Jord.—Faringdon (G. C. Druce); Inkpen (Miss E. S. Todd).

OXFORDSHIRE (23).

V. *agrestis* Jord.—Sturdy's Castle (G. C. Druce).
V. *segetalis* Jord.—Oxford (G. C. Druce).
V. *ruralis* Jord.—Minster Lovell (G. C. Druce).
V. *variata* Jord., var. *sulphurea* Drabble—Goring (J. E. Little).

BUCKINGHAMSHIRE (24).

V. *agrestis* Jord.—Hanslope (G. C. Druce).
V. *contempta* Jord.—Hampden Bottom (G. C. Druce); Chesham Vale (W. C. Barton).
V. *contempta* Jord., var. *patula* Drabble—Chesham.
V. *Lloydii* Jord.—Gerrard's Cross (T. A. Dymes).

SUFFOLK (25, 26).

V. *anglica* Drabble—Cavenham (G. C. Druce).
V. *variata* Jord., var. *sulphurea* Drabble—Framlingham.

NORFOLK (27, 28).

V. *segetalis* Jord.—Wallington (J. E. Little).
V. *Deseglisei* Jord., f. *subtilis* (Jord.)—Wallington (J. E. Little).
V. *arvatica* Jord.—Wallington (J. E. Little).
V. *Lejeunei* Jord.—Santon Warren (J. E. Little); Appleton (C. H. Hubbard).
V. *lutea* Huds., f. *Curtisii* Forster (*Forsteri* H. C. Wats.)—Santon Warren (W. C. F. Newton).

CAMBRIDGESHIRE (29).

V. *agrestis* Jord.—Fulbourne (R. W. Butcher).

BEDFORDSHIRE (30).

V. *Deseglisei* (Jord.)—Rowney Warren (J. E. Little and F. Druce).

HUNTINGDONSHIRE (31).

V. *ruralis* Jord.—Stibbington (R. W. Butcher).

NORTHAMPTONSHIRE (32).

V. *Lejeunei* Jord.—Harleston (G. C. Druce).

GLOUCESTERSHIRE (33, 34).

V. *Deseglisei* Jord., f. *subtilis* (Jord.)—Ford (H. J. Riddelsdell).
V. *ruralis* Jord.—Whittington (W. Notcutt).

STAFFORDSHIRE (39).

V. *lutea* Huds.—Ecton (W. H. Purchas).

RADNORSHIRE (43).

V. *Deseglisei* Jord.—Knighton (A. H. Wolley-Dod).
V. *lutea* Huds.—Moelfryn (R. Melville).

CARMARTHENSHIRE (44).

V. *segetalis* Jord.—Bethesda (F. L. Shaw).

CARDIGANSHIRE (46).

V. *Deseglisei* Jord.—New Quay (F. L. Shaw).
V. *lepida* Jord.—Gyfarllwyd (H. E. Fox).
V. *lutea* Huds.—Gyfarllwyd (H. E. Fox).

ANGLESEA (52).

V. *lutea* Huds., f. *Curtisii* Forster (*Forsteri* H. C. Wats.)—Newborough (J. A. Wheldon).

LINCOLNSHIRE (53, 54).

V. *Lejeunei* Jord.—Carlby (G. C. Druce).

LEICESTERSHIRE (55).

V. *segetalis* Jord.—Harston.

NOTTINGHAMSHIRE (56).

V. *lepida* Jord.—Bulwell Hall Park (L. Bulley).

DERBYSHIRE (57).

V. *segetalis* Jord.—Ashover, Tansley (E. & H. Drabble).
V. *variata* Jord.—Derbyshire 1845 (A. L. in Herb. Kew).
V. *lutea* Huds., f. *amoena* Henslow—Tansley (E. & H. Drabble).

CHESHIRE (58).

V. *Deseglisei* Jord.—Alderley (J. Britten).

LANCASHIRE (59, 60, 69 in part).

V. *ruralis* Jord.—Sandscale (D. Lumb).
V. *variata* Jord.—Skelmersdale (G. C. Druce).
V. *variata* Jord., f. *sulphurea* Drabble—Rainford Moss (J. A. Wheldon).
V. *lutea* Huds. and f. *amoena* Henslow—Lupton near Kirkby Lonsdale (T. A. Dymes).

YORKSHIRE (61, 62, 63, 64, 65).

V. *agrestis* Jord.—Beverley (C. W. Horrell).
V. *segetalis* Jord.—Tedmandale, Seamer Carrs (C. W. Horrell).
V. *Deseglisei* Jord.—Ryhill (W. A. Sledge); Flasby (F. Ashwell); Seamer Moor (C. W. Horrell).
V. *Deseglisei* Jord., f. *subtilis* (Jord.)—Collingham (E. C. Horrell).
V. *ruralis* Jord.—Askham (W. A. Sledge).
V. *anglica* Drabble—Barmby Moor (W. J. Fordham).
V. *derelicta* Jord.—Ripon (Miss E. S. Todd).
V. *arvatica* Jord.—Wetherby (W. A. Sledge).
V. *variata* Jord.—Barmby Moor (W. J. Fordham).
V. *variata* Jord., var. *sulphurea* Drabble—Aberford (P. H. Arundel).
V. *Lloydii* Jord., var. *insignis* Drabble.—York (C. Rudd).
V. *Lejeunei* Jord.—Adel (W. A. Sledge); Morley (F. Ashwell); Clayton Scars near Scarborough (E. C. Horrell).
V. *lepida* Jord.—Bolland (J. B. Pickard).
V. *lutea* Huds., f. *sudetica* Willd.—Middleton in Teesdale (W. J. Fordham).
V. *lutea* Huds., f. *amoena* Henslow—Malham Cove (W. R. Sherrin).

NORTHUMBERLAND (67, 68).

V. *lepida* Jord.—Low Fell (W. J. Fordham); Barington (H. E. Fox).

WESTMORLAND (69).

V. *Lloydii* Jord.—Meathop Moss (T. A. Dymes).
V. *lutea* Huds., f. *amoena* Henslow—Windermere (T. A. Dymes).

CUMBERLAND.

V. *segetalis* Jord.—Melmerby (G. C. Druce).
V. *Lejeunei* Jord.—Wigton (J. M‘Andrew).
V. *lepida* (Jord).—Ousby (G. C. Druce).
V. *lutea* Huds., f. *amoena* Henslow—Seathwaite, Buttermere; Ousby (G. C. Druce); Hesket Newmarket (D. Oliver).
V. *lutea* Huds., f. *Curtisii* Forster (*Forsteri* H. C. Wats.)—Skinburness.
V. *lutea* Huds., f. *Pesneaui* Lloyd & Foucaud—Seascale (T. A. Dymes).

PLANT NOTES.

E. & H. Drabble.

The records, unless otherwise stated, are our own.

Ranunculus auricomus L., var. incisifolius Reichb. Calow, Derbyshire, April 1905; var. apetalus Wallr. Spital, Derbyshire, April 1905.

Ranunculus Flammula L., var. latifolius Wallr. Mitcham Common and Wimbledon Common, Surrey, 1903; Wingerworth, Derbyshire, July 1908; Colne, Lancashire, 1908; var. ovatus Persoon (of *Camb. Brit. Flora*). Grange Hill, Essex, 1904; Flitwick, Bedfordshire, July 1905; var. petiolaris Lange (scoticus E. S. Marshall). I have a specimen from Ullswater (1909) which is clearly identical with the plant drawn in *Camb. Brit. Flora* iii., pl. 131, and as the specimen from which this plate was drawn was supplied by E. S. Marshall himself there can be no doubt about its correctness.

Epimedium alpinum L. Near Windermere (no date, probably about 1870), Miss Barton in *Herb. H. E. Wilkinson.*

Papaver Rhoeas L., var. violacea Bréb. Pentire, Cornwall, August 1907.

Papaver dubium L., var. collinum (Bogenh.). Ham Street, Surrey, 1904.

Cardamine amara L., var. erubescens Peterm. Rickmansworth, Herts, May 1903.

Dianthus deltoides L. Abundant on the debris of a limestone quarry near Youlgrave [Derbyshire], July 20, 1878, Ch. Bailey.

Cerastium arvense L., var. glabrescens M. & K. West Kirby, Cheshire, June 1908.

Cerastium vulgatum L. (triviale Link), var. pentandrum Syme. A little 5-stamened annual form. Wallasay Sandhills, Cheshire, 1908.

Cerastium tetrandrum Curt., var. pedunculatum Bab. Wallasey, Newbrighton and Leasowe, Cheshire, 1907.

Cerastium viscosum L. (glomeratum Thuill.), var. apetalum Dum. Nether Loads, Derbyshire.

Stellaria neglecta Weihe, var. decipiens Marshall. Southfleet, Kent, June 1903; Kew, Surrey, 1926.

Stellaria Holostea L., "f. apetala." Stoke, May 1874, H. E. Williamson.

Arenaria serpyllifolia L., var. stricta Towns. Dorking, Surrey, 1904.

Sagina subulata Presl, var. glabrata Lange. Brae, Shetland (no date, no collector's name), as *S. subulata*.

Sagina ciliata Fr., var. patula (Jord.). Idless, Cornwall, July 1910, E. & H. Drabble; Chavey Down, Berks, July 1872, S. A. Naylor (as *ciliata*); Westham, near Pevensey, Sussex, September 1875, H. E. Wilkinson (as *ciliata*).

Sagina ciliata Fr., var. glabra (=S. patula β glabra Lloyd & Foucaud Fl. Ouest, p. 60; ? S. ambigua Lloyd Fl. Ouest, ed. 1, p. 74; S. ciliata, var. ambigua Corb. Fl. Norm., p. 107). Gravesend, Kent, June 1903.

Sagina apetala Ard., var. prostrata S. Gibs. Over Haddon and Newbold, Derbyshire, 1909-10, E. & H. Drabble; Richmond, Surrey, June 1902, E. Drabble; Milverton, Warwickshire, August 1889, E. Lomax.

Sagina ciliata Fr., var. filicaulis (Jord.). Tilbury, Essex, July 1885, E. F. Linton (as *ciliata*).

Montia chondrosperma Fenzl (verna Neck.), var. intermedia (Beeby) Druce. Holymoorside, Derbyshire, June 1912.

Linum catharticum L., var. dunense Druce. Lytham, Lancashire, July 31, 1875, E. F. Linton (as *catharticum*).

Sagina nodosa L., var. moniliformis Lange. Via Gellia and Burbage Valley, Derbyshire.

Oxalis Acetosella L., var. subpurpurascens DC. Rose Castle, June 7, 1873, S. A. Naylor; Madeley, Shropshire, May 1880, Mrs Lynam (in *Herb. H. E. Wilkinson* as *Acetosella*).

Acer campestre L., var. leiocarpon Wallr. Great Malvern, May 1868, H. E. Wilkinson.

Trifolium striatum L., var. erectum Gaspar. Dungeness, Kent, 1903, S. E. Chandler (as *striatum*).

Trifolium dubium Sibth., var. erectum Soy.-Will. (var. microphyllum Ser.; var. pauciflorum Coss. & Germ.). Hady, near Chesterfield, Derbyshire; a mere ecad.

Lathyrus sylvestris L., var. latifolius Peterm. Banks of the Whiteadder, Chirnside, Berwickshire, July 1885, P. F. Lee (as *sylvestris*).

Potentilla erecta Hampe, var. sciaphila Zimm. Hady near Chesterfield, Derbyshire, 1906.

Pyrus rupicola Syme. Recorded from Matlock by J. G. Baker and W. W. Newbold in *Journ. Bot.*, 1884. I possess a specimen gathered at Matlock Bath and correctly named by Joseph Whittaker, in May 1864.

Chrysosplenium alternifolium L. Matlock, Derbyshire, May 1875, Mrs Madden.

Peltiphyllum peltatum (Torr.) Engl. A specimen sent to me for determination in 1925 by Canon F. L. Shaw proved to be this Californian mountain plant. It was growing by the side of the River Dove at Ilam, and appeared to be fully established. Canon Shaw thinks it may be an escape from the grounds of Ilam Hall.

Aethusa Cynapium L., var. agrestis Wallr. Spital, near Chesterfield; this seems to be a mere state.

Daucus Carota L., var. comosus Grogn. West Kirby, Cheshire.

Circaea lutetiana L., var. cordifolia Lasch. Portishead near Bristol, August 1868, H. E. Wilkinson (as *lutetiana*).

Senecio erraticus Bert. Brockenhurst, Hants, August 1925.

Senecio aquaticus Hill, var. intermedius Druce. (? major Bab.). Fillongley, Warwickshire, July 1854, T. K.

Senecio Jacobaea L., with cream coloured (not yellow) flowers. Ventnor, Isle of Wight, August 1928.

Cirsium heterophyllum Hill. The entire leaved plant, Wormhill, Derbyshire. The var. *laciniosum* Norrlin was kept in cultivation for many years in my garden and retained its special character.

Sonchus oleraceus L., var. triangularis Wallr. Spital, near Chesterfield; var. integrifolius. Lant Lane, near Tansley, Derbyshire.

Sonchus asper Hill, var. integrifolius Lej. Spital, near Chesterfield.

Campanula Rapunculoides L. Lathkil Dale, Derbyshire, 1912, (status doubtful).

Veronica arvensis L., var. nana Poir. (eximia Towns.). Castleton, Derbyshire; a mere state, I believe.

Pedicularis sylvatica L. Connor Hill, Kerry, June 1886, A. E. Lomax, with very hairy calyx, but in other respects normal.

Leonurus Cardiaca L. Barlow, Derbyshire.

Chenopodium album L., var. incanum Moq. (var. spicatum, f. incanum Moss & Wilmott). Spital, near Chesterfield, Derbyshire.

Chenopodium ficifolium Sm., var. microphyllum Murr. Kelvedon, Essex, 1852, E. G. Varenne (as *C. album*).

Chenopodium opulifolium Schrad., var. mucronulatum G. Beck. St Anne's-on-Sea, October 1907, C. Bailey (as *ficifolium*).

Atriplex patula L., var. linearis Moss & Wilmott, f. integrifolia Beck. Lancing, Sussex (c. 1870), H. E. Wilkinson (as *A. angustifolia*); Calow, Derbyshire, 1906, E. Drabble; f. hastifolia Beck. Lancing, H. E. Wilkinson (as *angustifolia*); var. serrata Moss & Wilmott. Spital, Derbyshire, September 1902; Llandudno, Carnarvonshire, August 1904; var. erecta Lange, f. crassa Moss & Wilmott. Wallasey, Cheshire, September 1905, E. Drabble; Ross, Herefordshire, September 1851 (no collector's name); var. bracteata Westerlund. Portreath, Cornwall, August 1905; Wallasey, Cheshire, September 1905; Lytham, Lancashire, September 1902.

Atriplex hastata L., var. genuina G. & G. Wallasey, Cheshire, September 1905; Spital, near Chesterfield, September 1907; var. genuina, f. salina Moss & Wilmott (A. triangularis Bab.). Wells, Norfolk, September 1884, E. F. Linton (as *A. prostrata* Bab.); var. microtheca Rafn. Spital, Derbyshire, September 1926.

Atriplex glabriuscula Edmondst. (virescens (Lange)). Kennack Cove, Cornwall, August 1904, E. Drabble; Bognor, Sussex, S. A. Naylor (c. 1870); Lancing, Sussex (c. 1869), H. E. Wilkinson; var. Babingtonii (Woods) Dr. Lytham, Lancashire, September 1902; Llandudno, Carnarvonshire, August 1904.

Suaeda maritima Dum., var. macrocarpa Moq. Portishead, Somerset, July 1868, H. E. Wilkinson (as *maritima*); var. flexilis Rouy. Portishead, Somerset, July 1868, H. E. Wilkinson (as *maritima*); King's Lynn, Norfolk, August 1897 (no collector's name, as *maritima*).

Rumex conglomeratus Murr., var. divaricatus Bluff. & Fing. Chesterfield, Derbyshire.

Rumex Acetosella L., var. angiocarpus (Murb.) Celak. Wallasey, Cheshire.

Quercus sessiliflora Salisb., var. pubescens Loudon. Renishaw, Derbyshire, August 1909.

NOTES ON POTAMOGETON NATANS L.

J. GORDON DALGLIESH, F.L.S.

The outcome of the present paper is the result of some years' observations of *Potamogeton natans* in the field. Hagström (*Critical Researches on the Potamogetons*) recognises six varieties of *natans* based chiefly on the form of the leaves. Fryer has clearly shown (*Potamogetons of the British Isles*) that Koch's variety, *prolixus*, is merely a state, and admits one variety only, namely *linearis* Syme. It behoves any worker who would essay to tread the path of critical botany to walk with extreme care especially when dealing with such a difficult group as the Potamogetons where it is rare to find entire agreement among students. In collecting or observing *Potamogeton natans in situ* the following details should be noted:—The depth of water and the rate of its movement or, if stagnant, the nature of the substratum, also what other species, if any, grow in the immediate vicinity. Fryer always affirmed that one could not have too large a series of any one species of Potamogeton, and it is only when a large series of *natans* is seen that certain differences can be recognised and appreciated. Conard in his *Monograph of the Nymphaeaceae* writes pertinently:—"It is interesting to note how various observers have been impressed with different features [in plants] as they appear more or less exaggerated in certain localities." It is just this that gives rise to those impressions one gets with regard to *Potamogeton natans*. Hagström enumerates the following:—*vulgaris* Koch et Tis., with leaves oval-oblong, about 110 × 30 mm.; *rotundifolius* Brébisson, with leaves large and roundish; *prolixus* Koch, with leaves oblong-lanceolate and internodes and petioles long; *pygmaeus* Gandin, a small shallow water form; and *terrestris* Gray. Whether these be regarded as mere states or varieties is, for the moment, of secondary importance. It is, however, important that these states, forms, or varieties should at any rate be recognised even if no agreement be forthcoming as to their status. Not all botanists are agreed as to the status of the British forms recognised by some as species or varieties of *Callitriche*, for "these distinctive characters which have been given fail when applied to a large number of specimens collected in different parts of the world" (vide *Handbook Brit. Flora*, Bentham and Hooker, 7th ed.). Arthur Bennett writes in the introduction to the *Potamogetons of the British Isles*:—"Considered from the local point of view this splitting up into varieties is of value so long as they are held to be local variations; studied in connection with their environment as to colour, depth, density, chemical composition of the water, etc., they would in time evolve many interesting facts on their origin and evolution." This is the object of the present paper and not by any means to claim that these variations in *Potamogeton natans* are of great taxonomic importance, but to show they do exist and can be observed by any field botanist sufficiently interested in the matter. The present writer holds to the theory that, above all else, chemical composition of the water is one of the greatest factors in producing these states or varieties in Potamogetons and the submerged aquatics in general. Near Midhurst, in West Sussex, are some ponds of small size, indeed, one of these is little more than a mere swamp, situated on common land amidst rushes and heather. Here grows a barren state of *Potamogeton natans*. The plants have never during a period of many years' observation been known to produce fruiting spikes. On submitting specimens to Mr Arthur Bennett he wrote as follows:—" The *natans* is a fair specimen of the Linnean herbarium (? Linnaeus' type). It, in aspect, quite simulates the North American *pulcher* Tuck., and I have seen U.S.A. specimens like yours named as *pulcher*. It is not a common form of *natans*." In appearance this form is similar to the one figured in the *Potamogetons of the British Isles*, plate 1, fig. 2, only, unlike that specimen, it can hardly be described as a land form, though certainly some of the specimens gathered during August 1926 were on semi-dry ground, while others were in shallow water. Between Bepton and Cocking in West Sussex is a disused brickfield with two small ponds fringed with *Typha latifolia*. The water here is shallow and upon it floats a very small form of *natans*. Observations upon this form have been kept up from 1910 to the present year 1928 and never at any time have fruiting spikes been found. Gatherings were also submitted to Mr Arthur Bennett, who pronounced it to be either young or a small state. In view of the length of time the plant has been under observation the latter view must be held. This form agrees very closely with four sheets in the Fryer herbarium at the British Museum.

1. No. 408, labelled " Small specimen, Chatteris and Mepal, 13.9.1887."
2. On this sheet the specimen is in the flowering stage, labelled " Cultivated plant, pond. Root from Haslemere, Surrey (W. H. Beeby). July 9th, 1888."
3. In fruit, but, unfortunately, no data.
4. No. 375, Scalloway, Shetland, ex Herb. W. H. Beeby.

All these four, in size of floating leaf, agree with the West Sussex specimens enumerated above where the measurements do not exceed 55 mm. × 23 mm. This is no doubt Hagström's *pygmaeus* Gaudin, which he describes as a small, shallow-water form. Leaf measurements have been found to be very constant throughout a great number measured. The largest floating leaved plant of *natans* the present writer has seen is a specimen in the Fryer Herbarium, No. 2157, measuring 115 mm. × 61 mm. Of this specimen Fryer wrote:—" No true variety of *Potamogeton natans* grows in the fens; the earlier growths from this rootstock had narrow, elongated leaves which might have been assigned to var. *prolixus* Koch. Specimen from Witcham meadowlands, Mepal, 13.8.1892." The variety Hagström gives as *vulgaris* Koch et Tis., with leaves broadly oval, is possibly the type state, the form generally figured in most works under the name *Potamogeton natans*. The leaves might well be described as spathulate. This is the type in Fryer's herbarium, No. 2157 (*vide supra*). *Ovalifolius* Fieber is described with leaves ovate-oblong, about 110 mm. × 30 mm. Forms answering to this description have been gathered from a pond at Horsted Keynes, East Sussex, a very graceful slender plant growing in moderately deep water. Well-defined forms taken from ponds having a substratum of clay and a considerable depth of water between Midhurst and Cocking, West Sussex, possessing thick floating leaves more lanceolate than spathulate, undoubtedly approach specimens labelled *prolixus* Koch from Bavaria.

It is interesting, though at the same time difficult, to account for the extreme localisation of *Potamogeton natans* in certain restricted areas. At Lewes Levels, East Sussex, there are marshlands intersected with both wide and narrow ditches. In these ditches are to be found *Potamogeton densus*, *lucens*, *acutifolius* and *panormitanus*, but no *natans*, though it grows not far distant in the stream known as the Cockshute. Here during 1925 flourished in great profusion the form described as *vulgaris* Koch et Tis., with leaves measuring 80 mm. × 51 mm. During the years 1926, 1927, and 1928 the growth has for some unexplainable reason considerably diminished., only a few straggling examples being now found.

Owing to the kindness of Dr G. Claridge Druce, F.R.S., the writer has been enabled to examine many interesting forms of *natans*, amongst these being the much discussed Killarney hybrid. Here again one is faced with a specimen of the *natans* group which is a puzzle to critical students. One cannot dismiss the plant with the remark of Mr W. H. Pearsall, who does not accept the suggestion of a hybrid, that this is "simply an induced state of *natans*," though agreeing with him that "in the absence of fruit it is difficult to be certain." Mr Arthur Bennett will not even admit it to be a form but merely says it is "a plant coming on to maturity," while a late and valued friend, the Rev. E. S. Marshall, to whom the writer is indebted for his first awakening to consciousness a love for field botany and one of the most careful and critical workers, says, "Apparently a deep-water form or state of *Potamogeton polygonifolius*!" Hagström, whose death was a serious blow to the critical study of the Potamogetons, says, "It is a very distinct hybrid, *P. natans* × *polygonifolius* (or *gramineus* × *lucens* × *natans*)." Dr Druce rightly considers it to be a hybrid, *natans* × *polygonifolius*, and in *Rep. B.E.C.*, 350, 1908, has identified it with *Potamogeton gessnacensis* Fisch. Die Bayer Potam., 31, 1907. Here is a typical example of the necessity for a very careful study of the *natans* group and the fallacy of the "lumper" school who would class all forms together. The writer agrees with Dr Druce, whose enthusiasm and helpful encouragement have so greatly aided field workers and whose studies in British botany stand out pre-eminently, that this form should remain, for the present at any rate, as *Potamogeton gessnacensis* Fisch. *Pota-*

mogeton natans L., var. *rotundifolius* Brébisson, is a very distinct form, generally, in the writer's observations, associated with small, stagnant ponds. It is when one sees forms such as this that the necessity becomes apparent for recognition of the various forms. Who, for instance, but the most critical observer could associate this with say, the curious grass-leaved forms and say they belong to one and the same species? Both in appearance are totally dissimilar. There is such an example as this latter, identified at first by the collector as *acutifolius*, in Dr Druce's herbarium (Ref. No. 216) from Edwardstone, Suffolk, 21.8.1913, collected in a pond "very much shaded by trees." This specimen agrees with one in the writer's possession collected by Miss G. Lister, F.L.S., "submerged in swift current, River Roding," but this may be *polygonifolius* in the state known as *pseudo-fluitans*. A small form with flowering spikes from Loch Winlan, Caithness, 7.8.1885, in Dr Druce's herbarium and referred to by Mr Arthur Bennett as a "very interesting form" is certainly a typical example of *pygmaeus* Gaudin and is identical with the small, barren states from the brickfield ponds in West Sussex (*vide supra*) and the small specimens enumerated as 1, 2, 3, and 4, in the Fryer collection. A "mud form" from Oxford, August 1904, in herb. G. C. Druce, is similar to the barren shallow-water form from Cocking, West Sussex, or may possibly be Gray's *terrestris*, but the material is insufficient to determine with any degree of certainty. A specimen of *Potamogeton natans* brought from a pond at Chailey, East Sussex, on July 20, 1928, and kept in an aquarium until September 4, showed a diminishing in size of the unfolding floating leaves as the season advanced, being on the last date much reduced, as some examples only measured 28 × 13 mm. *Potamogeton natans* is very erratic in its choice of habitat, also in its growth. At Horsted Keynes, East Sussex, there are two ponds within a stone's throw of one another. In the one *natans* covers the water; in the other pond not a single example is to be found. On large ponds where it has plenty of room to expand, *natans* is more often than not restricted in growth to one small spot. On the other hand a very small and dirty pond much used by cattle for drinking purposes is covered with a luxuriant growth. Three ponds at Henfield, West Sussex, within a range of a few yards from one another, contained *Potamogeton crispus* in one, *P. natans* in another, and *P. natans* and *P. densus* in a third. In one of these ponds *P. crispus* appeared to be the only form of submerged aquatic.

NATURE'S SPECIES AND HUMAN RACES IN THEIR ENVIRONMENT.

E. Almquist.

I.—THE IMPORTANT MEANING OF THE HABITAT.

If we exclude cultivated and ruderal forms almost all wild plants need their special habitat or environment where they live, often distant from their kindred. Nature has created most of them constant. Linné proved their constancy and named them as species. Now we know that all individuals of a constant sexual species possess the same genes. In most groups of wild plants we do not find hybrids. Alexis Jordan proved that the micro species also, although growing together, do not cross spontaneously. Thus we conclude that the constant wild plants do not cross spontaneously, or that the newbred hybrids do not prosper in the habitat of the parents.

I have observed some spontaneous hybrids and will present a few samples.

Geum intermedium represents that most splendid hybrid of *rivale* × *urbanum*, and enjoys in high grass its own habitat. It does not grow in the damp or dry habitats of the parents. Other hybrids of the kind are rare. In the cultures of *G. intermedium* we discover different forms. We are able to conclude: *G. intermedium* frequently finds its convenient habitat in the neighbourhood of the parents, other hybrids of the same are scarcely fit for living there (*Acta Hort. Bergian.* ix., p. 67).

I find *Carex microstachya*, *i.e.*, *canescens* × *dioica*, sometimes after the draining of a bog. The habitat of the parents was spoiled and the hybrid appeared for a short time. Probably the hybrid prospered in the altered environment. The parents disappeared, soon also the *C. microstachya*. We must suppose that some individuals crossed before in the bog but did not prosper. [It is the same with some of the Fen Viola hybrids.—Ed.] Thus we are also able to interpret the observations that hybrids at times appear after change of the environment.

If most individuals of the genus *Salix* are hybrid, there must be some reason for this extravagance. Perhaps the permanent crosses are of value. The seeds of a *Salix* fly far off from the mother plant. Thus they will perhaps reach proper habitats and form still other hybrids. In the Alps especially we should reasonably expect this probability.

II.—TASK AND PROBLEMS INFLUENCE THE HUMAN RACE.

Linné united fixed micro species with collective species, *e.g.*, *Primula veris officinalis* and *P. v. acaulis*. All individuals of the constant micro species have identical genes. But he found also well limited species, whose individuals were different, *e.g.*, *Brassica oleracea viridis*, *Canis familiaris lapponum*, *Homo sapiens europaeus*. Kept in perfect isolation these races grow tolerably constant, but they cross often with the kindred in the neighbourhood. In the pure European race the brothers and sisters are all different; all human individuals are hybrids. It is obvious that the most useful qualities of the man will be looked for and especially favoured; on the contrary the less valuable will be neglected. Thus some genes disappear and the useful prevail more and more. The Anglo-Saxon and the Swedish races were for thousands of years much the same. To-day certainly we see the resemblance, and also the great differences. We know partly the reasons. England organised and controlled half the world. This work demanded a comprehensive activity. These qualities prospered. On the contrary, the peasantry has not been protected enough, although it represents the duration and continuation of a race. Therefore the stability is threatened, the race will perhaps cease growing and senility appear. Without vital power wealth and authority must decline (Die Sonne, 1928, p. 392, 766).

The constant species do not show senility. They are immutable in their own habitat. On the contrary the hybrids are very various. The European race produces in the same country conspicuous varieties. In Germany and Sweden two rather different extremes have been distinguished: the northern and the falish race. The former is active, enterprising, vivacious; he does not find the native body fit for his needs. The other is very faithful, stays at home, is often indolent, is without fancy, but is a good labourer in his task. Perhaps these two extremes are developed from the same origin. The one moves to the towns or emigrates to foreign countries; the other stays at home, continues the works of his ancestors and upholds the race.

FLORA'S LEAGUE.

Sir Maurice Abbot-Anderson, C.V.O., etc.

At the kind invitation of the Secretary of the Botanical Society and Exchange Club of the British Isles, I take great pleasure in penning the following particulars of the above League which I founded last June for the protection and preservation of wild flowers in the British Isles. At the same time, it is a healthy sign that I have received correspondence from Malta and have sanctioned the formation of a Branch in that island.

On all sides there is definite evidence that now is the psychological moment to "make a noise" in order to attract attention to this important matter and to achieve something practical. The County Councils Association, recognising that disaster is staring us in the face, have deemed it necessary to pass bye-laws to protect their county flora against vandalism. A very recent example may be cited to the credit of Hertfordshire, and I am sure we all hope to see this excellent precedent followed.

There is a consensus of opinion that the chiefest means to obtain a lasting and definite result must be by the education of our children. I am therefore anxious to enrol as many children as possible and to this end (whilst recognising the arguments against) I decided that it was essential to have a badge symbolising the League. This has already been made. The question then arose as to whether a charge should be made for this token. The definite conclusion was arrived at that, if the badge was presented *free* to each member, it would not be valued at the same worth as it would be if a small charge was made for it. As, however, the primary object is *not* to raise money, and as I am anxious that every member shall possess a badge, it has been decided to charge for this on a "sliding scale," the maximum to be one shilling and the minimum a penny. Every badge is sent out in a little box, wrapped in a pamphlet indicating shortly the main objects of the League.

I am anxious that it should be clearly and distinctly understood that beyond this there is *no* other financial obligation associated with membership.

I am enrolling "all and every" as members, and gradually mapping out the whole country into areas, each with its local secretary, who, it is suggested, besides enrolling new members, will where possible act as "guardian" of the rare and scarce plants in each neighbourhood and use every practicable means to protect them. Will those who are willing to act as Local Secretaries kindly send me their names and addresses, mentioning the possible range of their guardianship?

In order to bring the subject more closely home to the young folk, I am arranging, in association with Dr Green, of Birkenhead, popular lectures with lantern slides.

I am suggesting to all local branches that, when 250 members have been enrolled in any one district, I will make every endeavour to enlist the services of Dr Green to arrange a social evening in that district and to attend myself to distribute the badges.

I shall be very glad to receive any suggestions, inquiries, or applications for membership, which should be addressed to:—The Secretary of "Flora's League," 78 Portland Place, London, W.1.

I feel very confident that, if all those who are interested in the cause will give me their loyal co-operation, "Flora's League" will emulate my old school motto:—"Vires acquirit eundo."

NOTES ON MENTHA.

J. Fraser.

Mentha aquatica L., var. *subglabra* Baker. Stem thinly furnished with short, sharply deflexed hairs, more numerous upwards, especially under the nodes, and on the petioles. Leaves broadly ovate, obtuse or the upper ones acute, rounded, truncate or subcordate at the base, very thinly strewed with very short hairs on both faces, more numerous, though inconspicuous, on the nerves beneath. Calyx thinly covered with very short, sharply ascending hairs, curved upwards at the base. The rest as in *M. aquatica*.

The above is only an extreme form of the type, characterised by the few, very short hairs, especially on the leaves and calyx. There is no exact line of demarcation, for there is every degree of hairiness between this and the most hirsute and best forms of *M. hirsuta* Hudson, which is synonymous with *M. aquatica* Linnaeus. The above description is merely intended to fix Baker's var. *glabra* to the type and not to *M. aquatica* L., var. *major* Sole. I have a sheet of the latter sent me as *M. aquatica* L., var. *subglabra* Baker, and it is not difficult to get subglabrous forms of Sole's variety, which has longer leaves, cuneate at the base and distinct.

×*Mentha verticillata* L., var. *paludosa* (Sole). ×*M. verticillata* L., var. *congesta* Fraser. ×*M. verticillata* L., var. *ovalifolia* Briq., forma ad var. *atrovirentem* vergens (J. Briquet, 1894). No Mint, perhaps, has had more names given it by different collectors than Sole's *M. paludosa*. Sir James Edward Smith had a root sent him from Sole and after cultivating it he said it was not constant. This is very true so far as the subspicate inflorescence is concerned. I have been unable to get a subspicate form in the garden; and it does not always give one in different seasons, in the same spot, in a wild state. Sole's plate, No. 22, shows a single stem, with branches 1-2 in. long, all flowerless except the upper pair, which have about half-a-dozen flowers each. My best specimen has sixteen branches varying from 1-6 in. in length and twelve of them have a subspicate inflorescence, besides that of the main axis. The stems may be simple when crowded, but in wet places with plenty of room the branches may be nine or more inches long and have the verticils shortly separated; in shade or in hedges the verticils may be more widely separated, and the axis may end in 1-4 pairs of leafy bracts without flowers. I have now got fifteen sheets and am convinced that all of them are Sole's plant under different surroundings and varying degrees of moisture. With these comments, the description of ×*M. verticillata* L., var. *congesta* Fraser, in *Rep. B.E.C.* for 1926, Supplement, is still quite good, only the name of the variety is wrong and sinks in a synonym.

M. arvensis L., var. *subglabra* Fraser, nov. var. Stem erect or arching, straight or flexuous, simple or more or less copiously branched about the middle up to the inflorescence. 12-18 in. high, nearly glabrous at the base, thinly furnished with very short, deflexed hairs, chiefly on the angles, and more copiously with similarly short hairs on the axis of the inflorescence; branches long, slender, flexuous, ascending at a more or less acute angle; internodes 2-4 cm. or 2.5-6.5 cm. long on different plants, according to the surroundings. Leaves oblong-lanceolate to lanceolate-elliptic, obtuse to subacute, more attenuate at the base than the apex, serrate on the upper two-thirds, practically glabrous above, very shortly ciliate, very shortly pubescent on the midrib and primary veins beneath, 4.5-5.5 cm. long, 1.5-3 cm. broad; serratures shallow, lying close to the margin, obtuse to subacute, 0.25-1 mm. deep. Leafy bracts of the inflorescence and of the branches lanceolate, more acute, with acute serratures, and a few very short scattered hairs on both faces, more numerous on the nerves. Bracteoles lanceolate, acute, shortly downy, as long as the pedicels or those of the lower verticils, sometimes as long as the corolla. Verticils all sessile, overlapping the short petioles and part of the leaves when in bloom. Pedicels glabrous. Calyx campanulate, covered with very short, sharply ascending hairs; teeth triangular, acuminate, acute. Corolla pale to bright purple, thinly covered with short hairs without, subglabrous within. Stamens exserted. Fruit fertile.

The lanceolate-elliptic leaves, lanceolate bracts, subglabrous stems, leaves, bracts and calyx will generally be sufficient to distinguish this variety. The stems are much more nearly glabrous than *M. aquatica*, var. *subglabra*, above described. Tributary of the River Mole, E. Molesey, Surrey, 1927, J. Fraser; Billingshurst, W. Sussex, 1903, A. Webster; Pulborough, W. Sussex, 1901, E. S. Marshall in *Herb. C. E. Salmon*.

THE BRITISH BATRACHIA.

WILLIAM HARRISON PEARSALL.

Ten years having elapsed since the publication of my original paper on these plants in the *Rep. B.E.C.*, 1918, and the supplies of that report being exhausted, the opportunity for reprinting a fuller and revised description of the genus has been taken in the hope that members who have joined since that date may find it useful, and that additional stimulus may be given to the collection of these plants. Any changes that have occurred will be found recorded under the various species.

The actual collection of Water Buttercups presents little difficulty. They can usually be reached from the side of the water in which they grow, either directly by hand or with the aid of a walking-stick. A large stone attached to the end of a long piece of stout string will provide means whereby species growing out of reach may be readily secured. Many botanists possess a small dredger, which is even more useful for this purpose. After removal from the water the plants should be placed in the vasculum *and kept moist*, until the collector reaches home. By this time many of the petals of the flowers may have become detached. Assuming that all these belong to the same species (which is occasionally not the case) they should be stuck, while still moist and limp, to the gummed side of pieces of stamp selvage, pressed with the plants to which they belong, and subsequently be distributed with them. They are of the greatest value in the determination of difficult plants.

Upon reaching home the plants should be put at once into a liberal supply of water and may there be left until the next day, if necessary. They should then be carefully "floated out." For this purpose I use a zinc tray (18 in. × 11 in. × 3 in.), but any large vessel full of water will suffice. Place a sheet of white paper (the thicker and stiffer the better) under the surface of the water and see that it is entirely submerged. Select one entire plant and place it upon the paper, both being submerged. With a pair of fine-pointed steel forceps—or even a match-stalk—coax the leaves and branches to assume a natural position, with leaves, flowers and fruits well displayed. (The forceps are useful for detaching caddis-cases, dirt, or other foreign matter.) Then with the right hand take hold of the bottom of the paper and gradually raise it out of the water, when the lower part of the plant will adhere to the paper. Now take hold of the top of the paper with the left hand and very slowly raise the whole sheet—as a slightly inclined plane—out of the water, which will thus run off and leave the whole plant adhering to the paper. Care is required, as the water finally escapes, to prevent displacement of some of the leaves, but a little practice and patience will soon overcome this difficulty. To dry, put blotting-paper directly over each plant—whatever other paper may be used in addition—and dry paper and plant together in the press. On no account should gum or other adhesive be employed for mounting—water and adequate pressure between sheets of paper are amply sufficient. Change the blotting-paper and other paper used for drying (but not the white sheet to which the plant is now adhering) after 2 or 3 days. Care is required in changing; the blotting-paper should be lifted very slowly from bottom to top—and not in the opposite direction. When the whole plant is exposed, straighten out any folded leaves, display any hidden flowers or fruits, re-cover with dry paper and change this again after a week. Subsequently the plants may be left for a much longer period. When the plants and their white paper mounts are quite dry they should be enclosed in folded sheets of any thin paper, and thus protected they will keep indefinitely and may be readily examined.

If the "floating out" process appears too complicated and tedious—although really not so—good results may be obtained by mounting the moist plants directly upon their white sheets, carefully displaying their parts, and putting them at once under pressure.

Collectors would do well to remember that these plants afford the best characters when there are 2 or 3 heads of mature fruit upon each stem and, usually, flowers still present. Notes upon the depth of water, its rate of movement (if any), the nature of the substratum and what other forms grow in the vicinity, are always of assistance in determination.

I am greatly indebted to many botanists who have sent their herbarium specimens for examination, and in special degree to Messrs Jas. Groves, Dr G. C. Druce, the late W. P. Hiern and C. Bailey for their very generous help in this and other directions. I wish also to acknowledge the assistance I have received from foreign correspondents, especially the late Dr Hagström, who sent me a valuable collection of Swedish plants of this genus.

I have added a clavis for assistance in running a species down, but as it is based upon purely artificial distinctions it must be used with much discretion. Its hard and fast divisions do not occur in Nature and are merely relative, and not absolute, in their accuracy.

In determination too much reliance should not be placed upon any single character, but the full description should be consulted and the balance of evidence afforded by the characters carefully weighed before arriving at a decision:—

SHORT KEY TO THE VARIOUS FORMS.

1. Floating leaves absent ... 2
   Floating leaves present ... 14
   Submerged leaves absent ... 12
2. Peduncles normally much exceeding the leaves ... 3
   Peduncles normally shorter than or equalling leaves ... 8
3. Leaf-segments long, collapsing or parallel ... 4
   Leaf-segments short, diverging ... 6
4. Flowers large ... 5
   Flowers small ... var. *Bachii.*
5. Plant robust, peduncles stout, leaf segments numerous and long ... *R. pseudo-fluitans.*
   Plant smaller, peduncles slender, leaf segments fewer and shorter var. *minor*
6. Leaves very small (a sixpence will cover one), sub-circular, segments radiating like wheel-spokes ... *R. circinatus*
   Leaves larger ... 7

7. Leaves sub-circular or densely tufted. Flowers large, carpels hairy ...... *R. sphaerospermus*

Leaves often sub-circular, variable. Flowers small, carpels glabrous—plant usually maritime ...... *R. Baudotii*, f. *marinus*.

8. Flowers large 9

Flowers small 11

9. Peduncles short ...... *R. heterophyllus*, var. *submersus*.

Peduncles long 10

10. Peduncles stout, leaf-segments long, stout, sub-parallel. Receptacle nearly glabrous ...... *R. fluitans*.

Peduncles slender, leaf-segments shorter, more slender, not parallel. Receptacle hairy ...... *R. pseudo-fluitans*, var. *minor*.

11. Leaf-segments weak, collapsing. Carpels usually glabrous. Receptacle conical ...... *R. Drouetii*.

Leaf-segments short, rigid, diverging. Carpels hairy. Receptacle usually globular ...... *R. trichophyllus*.

12. Receptacle hairy. Leaves as in *R. tripartitus*. Stipules conspicuous. Carpels with prominent beak ...... *R. lutarius*.

Receptacle glabrous 13

13. Petals scarcely exceeding calyx. Leaf-segments broadest at base...*R. hederaceus*.

Petals about twice calyx. Leaf-segments narrowest at base . *R. Lenormandi*.

14. Peduncles long, normally much exceeding the floating leaves 15

Peduncles shorter than, or scarcely exceeding the floating leaves 19

15. Flowers large—often very large 16

Flowers much smaller—often small 18

16. Peduncles stout 17

Peduncles slender ...... f. *elongatus*.

17. Submerged leaves with numerous very long segments. Floating leaves few, often truncate ...... *R. pseudo-fluitans*.

Submerged leaves with much shorter and fewer segments. Floating leaves many, nearly circular or reniform ...... *R. peltatus*.

Submerged leaves as in *peltatus*, floating leaves semicircular—truncate ...... f. *truncatus*.

18. Plant robust, peduncles stout, much arched in fruit, often with a double curve. Stamens short ...... *R. Baudotii*.

Plant weaker, peduncles slender, straighter. Stamens longer ...... f. *confusus*.

19. Flowers large 20

Flowers small 23

20. Submerged leaves with short, rigid, divergent segments (as in *R. trichophyllus*)—sub-circular in outline and regularly disposed ...... *R. radians*.

Submerged leaves with longer segments (*not* as in *R. trichophyllus*)—less regular both in outline and arrangement 21

21. Floating leaves nearly circular—carpels hairy 22

Floating leaves reniform, tripartite, with segments having nearly straight margins. Carpels normally nearly glabrous ...... var. *trifidus*.

22. Segments of floating leaves much rounded, petioles long and slender. Submerged leaves with more or less rigid, divergent segments. Flowers few and large. Peduncles long ...... var. *floribundus*.

Segments of floating leaves normally wedge-shaped. Peduncles short. Submerged leaf-segments usually weak ...... *R. heterophyllus*.

23. Flowers small. Floating leaves very variable and irregularly divided ...... var. *Godronii*.

Flowers very small, or minute and inconspicuous. Floating leaves regularly tripartite 24

24. Flowers minute, petals about 3 mm., sub-acute. Submerged leaves few and distant, with extremely fine capillary segments ...... *R. tripartitus*

Flowers small, petals up to 6 mm., rounded at apex. Submerged leaves very rarely present (segments flattened). Carpels with prominent terminal beak ...... *R. lutarius*

ALTERNATIVE KEY.

FLOATING LEAVES ABSENT.

I. Peduncles normally much exceeding the leaves.

A. Leaf-segments long, collapsing.

1. Flowers very large.

(a.) Plant robust. Leaves with very numerous stout segments forming long coarse tapering tassels; peduncles stout.. *R. pseudo-fluitans.*

2. Flowers large or of medium size.

(b.) Plant more slender. Leaves with fewer, shorter, and more slender segments. Peduncles slender. Carpels usually hairy .... var. *minor.*

3. Flowers small.

(c.) Leaf-segments very few, stout, sub-parallel. Receptacle and carpels nearly glabrous ... ... *R. fluitans*, var. *Bachii.*

B. Leaf-segments short, rigid, diverging.

(d.) Leaves usually small (may be covered by a sixpence), short stiff segments radiating in one plane like the spokes of a wheel. Peduncles often 5 or 6 times leaves. Carpels glabrous .... *R. circinatus.*

(e.) Leaves larger, short, rather rigid segments diverging in every direction and forming sub-spheres- or slightly diverging and forming short dense truncated tufts. Peduncles stout. Flowers large. Carpels hairy .... *R. sphaerospermus.*

(f.) Leaves with short diverging segments. Flowers small. Carpels glabrous .... *R. Baudotii*, f. *marinus.*

II. Peduncles normally shorter than, or equalling, the leaves. (Flowers arranged below in order of decreasing average size.)

A. Flowers large.

(g.) Leaf-segments long, stout, sub-parallel, relatively few in number. Stamens short. Receptacle nearly glabrous.. *R. fluitans*

(h.) Leaf-segments not nearly so long, slender, collapsing. Long slender peduncles equalling or slightly exceeding the leaves. Receptacle hairy .... *R. pseudo-fluitans*, var. *minor.*

(i.) Leaf segments robust, shorter, usually sub-collapsing into a coarse brush or tuft. Flowers smaller. Peduncles short .... *R. heterophyllus*, var. *submersus.*

B. Flowers smaller.

(j.) Leaf-segments weak, collapsing. Flowers rather larger than in (k.). Carpels normally glabrous. Receptacle conical .... *R. Drouetii.*

(k.) Leaf-segments rigid, diverging. Carpels hairy. Receptacle usually globular, but may be sub-conical or even conical .... *R. trichophyllus.*

SUBMERGED LEAVES ABSENT (OR RARE).

Aerial leaves reniform. Carpels glabrous.

I. Receptacle glabrous no submerged leaves.

(a.) Leaves with shallow angular or rounded segments broadest at the base: flowers very small, petals scarcely exceeding calyx .... *R. hederaceus.*

(b.) Leaves with deeper rounded segments narrowest at the base: flowers much larger (about ½ in. diameter); petals twice calyx .... *R. Lenormandi.*

II. Receptacle hairy—submerged leaves rare, or absent.

(c.) Leaves as in robust *R. tripartitus*. Submerged leaves with distinctly flattened segments, divergent. Flowers minute. Stipules conspicuous. Carpels with a prominent beak. (South of England) .... *R. lutarius.*

BOTH FLOATING LEAVES AND SUBMERGED LEAVES PRESENT.

I. Peduncles long, tapering, much exceeding the floating leaves.

1. Flowers large, petals contiguous.

(a.) Floating leaves large, sub-peltate, reniform or nearly circular, divided nearly to the middle into much rounded segments .... *R. peltatus.*

(b.) Floating leaves approximating to semi-circular, sub-truncate at the base .... f. *truncatus.* Floating leaves extremely variable. A form having very long slender peduncles exceeding the attenuate petioles............ .... f. *elongatus.*

(c.) Floating leaves few, very large, shaped as in (a.) or (b.). Flowers very large, on very long peduncles. Submerged leaves with very long segments—a running water form......... .... *R. pseudo-fluitans.*

2. Flowers much smaller.

(d.) Floating leaves much more deeply divided than in (a.), into 3 nearly sessile or even stalked segments: leaves often transitional or absent. Peduncles stout, much arched, often with a double curve. Carpels nearly or quite glabrous. Stamens not usually exceeding the mature carpels .... *R. Baudotii.*

(e.) Floating leaves usually smaller and thinner in texture than in (d.). Peduncles much more slender and normally straighter. Stamens exceeding head of carpels in most cases .... f. *confusus.*

II. Peduncles shorter than, or scarcely exceeding, the floating leaves.

(f.) Floating leaves sub-circular and sub-peltate, or reniform, with long slender petioles and much rounded segments. Submerged leaves with rigid divergent segments. Flowers large. Receptacle spherical ...... *R. peltatus*, var. *floribundus.*

(g.) Floating leaves normally nearly circular, but very variable, deeply divided into wedge-shaped segments. Submerged leaves weak and sub-collapsing. Peduncles short, with sharp curve at base .... *R. heterophyllus.*

(h.) Floating leaves sub-circular, tripartite, with radiant sinuses. Submerged leaves sub-circular in outline and regular in disposition, with short rigid divergent segments as in *trichophyllus*. Carpels hairy .... *R. radians.*

(i.) Floating leaves usually reniform, tripartite, with sub-sessile cuneate segments having nearly straight margins. Submerged leaves not like those of *trichophyllus*. Carpels normally nearly glabrous .... var. *trifidus.*

(j.) Resembles (h.) when well developed, but commonly has smaller, thinner, and glabrous floating leaves, less regularly divided, often nearly semi-circular or with stalked segments. Flowers small . ... var. *Godronii.*

(k.) Leaves small, deeply trifid. Submerged leaves few, distant, with truly capillary segments. Flowers minute, petals about 3 mm., 3 veined, rather acute at the apex, very fugacious. (Cornwall and Co. Cork) .... *R. tripartitus.*

(l.) Leaves as in robust *tripartitus*. Submerged leaves rarely present, with distinctly flattened divergent segments. Flowers very small, petals up to 6 mm., rounded at apex. Carpels with prominent terminal beak .... *R. lutarius.*

1. R. FLUITANS Lamarck *Fl. France* iii., 184, 1778. Gr. et Godr. *Fl. Fr.* i., 25. *R. fluviatilis* [Web. ex] Wigg. *Batrachium fluitans* Wimm.

A large and robust plant of rivers with a decided current. Recorded for 75 vice-counties in Britain but absent from many in Scotland and Wales. I have never yet seen satisfactory *R. fluitans* from Ireland, but it is recorded for Antrim only. Stem very long—5-6 metres or more, at times—branched. Floating leaves normally absent, very rarely present and then extremely variable. Submerged leaves with long petioles, about twice trifurcate, with stout, rigid, very long (3 in. to 10 in.), linear forked sub-parallel segments, relatively few in number, black, and sometimes narrowed toward the tip. Stipules broadly lanceolate, half adnate, sometimes with large rounded auricles but often with none. Flowers large (up to 3.3 cm.), petals often 10 in number (sometimes two-seriate), many-veined, imbricate, persistent. Stamens numerous, very short, rarely long. Receptacle usually nearly or quite glabrous, occasionally somewhat hispid; globular or sub-ovoid. (In view of the conflicting evidence as to the presence or absence of hairs on the receptacle, it may be well to state that the majority of authorities—Dumortier, Rouy, Coste and many others—describe it as "glabrous;" Bab., "not hispid;" Hooker, "at length glabrous." Mr Jas. Groves (W.B.E.C. Rep., 1917) gives "often only sub-glabrous," which is an excellent description. In our own experience the receptacle is slightly hispid—especially at the base—during the flowering and earlier fruiting periods. Subsequently, however, this hispidity is more or less lost, owing to the deciduous nature of the hairs, but rarely does the receptacle become really glabrous.) Fruiting peduncles stout, tapering, usually shorter than (often equalling or slightly exceeding) the leaves, and often projecting from the water. Carpels large, rather inflated, normally glabrous but occasionally slightly hairy.

2. Var. BACHII (Wirtg.). *R. Bachii* Wirtg., *Verh. Prus. Rhnld.*, ii., 22 (1845).

A smaller and more slender form which is very rare, having been recorded for only 2 vice-counties. It was first described as a species—*R. Bachii* Wirtgen—in 1845, but later, as *R. fluitans* var. *Bachii* Wirtgen (*Fl. Preuss. Rheinpr.*, 15) in 1857, and this appears to be its true status. It possesses sub-sessile or shortly stalked submerged leaves which are relatively short. They have fewer and shorter segments which are occasionally obviously tapering at the apex. Flowers much smaller, usually with 5 broadly-obovate petals. Fruiting peduncles longer than the leaves. Receptacle and carpels not quite glabrous.

3. Var. CAMBRICUS (Ar. Benn.).

May perhaps best come here. A small, flaccid, extremely slender plant having the habit of *R. fluitans* but with shorter leaves often showing very few segments. Sometimes these submerged leaves are few in number, at other times rather more numerous, but in each case the segments are usually very few in number. The flowers are few, very small, and rarely fertile. (Llyn Coron, Anglesey.)

4. R. CIRCINATUS Sibthorp *Fl. Oxon.*, 175, 1794, excl. syn. L. *R. foeniculaceus* Gilibert *Fl. Lithuan.* v., 261 (1782). *R. divaricatus* Koch non Schrank.

A plant of canals, ponds and slow streams. Occurs in 76 vice-counties, but is absent from N. Lancs, Westmorland, and Cumberland; from half the Welsh counties and most of the north of Scotland. Locally abundant in 13 of the Irish divisions. The plant is very easily recognised by its characteristic submerged leaves with short, stiff segments radiating in one plane like the spokes of a wheel. The lamina (segments) nearly circular in outline and small—usually no larger than a sixpence—usually surrounding the stem. No floating leaves. Stipules small, narrow, tapering, adpressed, not auricled, caducous. The stem is slender, with long internodes below (I have measured some 20 cm. in length) and decreasing upward, often short at the top. Much branched in good specimens, when the leaves are usually found only on the branches and at their junction with the stem. In plants with simple stems the leaves occur on the stem. The leaves are often distant and rarely approximate, except on the branches. Although small, the leaves vary considerably in size—5 to 22 mm. in diameter. Flowers rather large for so slender a plant—up to 2 cm. in diameter. Petals many-veined (7 to 9), persistent, yellow at the base, usually contiguous or nearly so. Stamens many, exceeding the ovaries. Fruiting peduncles long (up to 5 or 6 times the leaves), tapering. Receptacle sub-globular, hairy. Carpels glabrous or with a few hairs, ± compressed upward, with a long beak.

Var. SUBAQUANEUS (Wahl.) nov. comb. *R. aquatilis*, var. *subaquaneus* Wahlenberg *Fl. Suec.* Ed. 2, ii., 1091, 1833. This plant is usually placed under *R. trichophyllus—conferroides* Hooker f.=*demersus* N. E. Brown=var. *droueti* f. *subaquaneus* Moss—f. *aspergillifolius* Hiern—but Hiern considered it to be "intermediate between *trichophyllus* and *circinatus*." Further examination of fresh material, however, strengthens my opinion that it is much nearer to *circinatus* than to any other species. The uniform size and characteristic shape of the short-segmented leaves, their limited growth and regular disposition point strongly to *R. circinatus*. The smallness of the flowers and the paucity of stamens are, in my judgment, due to the exceptional conditions under which the plant grows, producing both flowers and fruit under water. It is quite unlike the Scandinavian *conferroides* nor does it resemble the Savoy *lutulentus*.

It is a slender form growing in Rescobie Loch and Balgavies Loch, Forfar—totally submerged. No floating leaves, submerged leaves with short segments (up to 1 cm.) resembling in form and disposition those of *R. circinatus* but the segments do not always lie in the same plane. Internodes long and leaves often only produced at the top of the stem. The plant produces flowers freely but these are small and possess very few stamens. The fruiting peduncles are relatively short and usually show heads of mature fruit but the carpels are very few in number and therefore ± inflated above, always hairy when young but at maturity only showing a small number of stiff bristles at the top.

In the Rescobie Loch another distinct form grows with the above, from which it is easily separated. It is obviously a deep-water state—4 to 5 ft.—and never flowers. It has very slender *circinatus*-like leaves but they are much less robust and with fewer segments than the leaves of normal *R. circinatus* from England. The stems are naturally very long and with stretched internodes. In the absence of flowers or fruits it is at present impossible to place this, but its general appearance is that of depauperate *R. circinatus*. Future collectors will render great service if they will carefully note and record what other species—if any—grow in this loch.

5. R. TRICHOPHYLLUS Chaix in Villars *Hist. Pl. Dauph.* i., 335, 1786, emend. *R. divaricatus* Schrank, *Baier. Fl.* ii., 104, 1789, non Koch. *R. aquatilis*, e. *pantothrix*, Koch in Sturm. *Deutschl. Fl.* hf. 67, f. 1835. *Batrachium bipontinum* F. Schultz, in Gren. et Godr. *Fl. Fr.* i., 24, 1848. *B. trichophyllum* Van den Bosch, *Prodr. Fl. Batav.* 5, 1850.

Both *R. trichophyllus* Chaix and *R. divaricatus* Schrank were founded upon the same plant—No. 1162 of Haller's *Hist. Stirp. Helv.* ii., 69, 1768. From this it is necessary to exclude Haller's var. β which is *R. circinatus* Sibthorp (1794).

Chaix (*l.c.*) gives only, "*Ranunculus trichophyllus* (mihi) Hall., 1162: in rivulis limpidis, Valgaud. Devoluy." Haller's description (*l.c.*) is as follows:—"1162. Ranunculus caule fluitante, petiolis unifloris, foliis capillaribus, laciniis divergentibus. *Foeniculum aquaticum, tertium* Tabernaemont, p. 71. *Ranunculus trichophyllos, aquaticus, medio luteus* Column. ecphras. p. 315, 316. *Ranunculus aquaticus, albus, Foeniculi folio* Barrelier, ic. 566. Frequentissimus in rivulis quietis, fossisque aqua plenis. A priori 1161 differt, flore minori, foliis nulla quidem certa figura circumscriptis, multo tamen brevioribus divergentibus. Flos similis: tuba maxima.

β. Foeniculum aquaticum, cornutum C. B. *Prodr.*, p. 73. J. B. III., p. 784. *Ranunculus aquaticus, albus, cincinnatus, tenuissime divisis foliis, floribus ex alis longis pediculis innixis* Plukenet, p. 331. t. 55, f. 2. Circa *Nidau, Erlach, Mathod*, in fossis quietis. J. B. *Genevae*. C. B. in stagnis prope *Hiltelingen*.

Priori proximus, folia habet a caule parum recedentia, omnino circulari circumscriptione terminata, lobis densissime congestis imbricatis. Nolui tamen a 1162 separare."

A study of the views of Villars' contemporaries and earlier writers makes it quite clear that his name was intended to be composite and not segregate; that *trichophyllus* and *Drouetii* were never separated; that the aggregate plant was well known to all and was the plant described by Haller, whose description after all is the real type account of the name. It is therefore evident that 1162 (=*R. trichophyllus* Chaix in Vill.) = *R. trichophyllus* Ch. in Vill. emend. Godron in Gren. et Godr. *Fl. Fr.* i., 23, 1848, and *R. Drouetii* F. Schultz (*l.c.* i., 24). In this restricted sense *R. trichophyllus* is a well marked species, but differing considerably in the size of its flowers and submerged leaves. Floating leaves absent. Submerged leaves with more or less rigid and divergent segments, sub-circular in outline or bush-like, commonly short. Stipules ½ to ⅔ adnate, large, rounded, and usually auricled. Flowers small as a rule, but not invariably so, with non-contiguous fugacious petals—up to twice as long as the sepals—white with yellow claw. Stamens few, often about 12 (9-15 Rouy), exceeding the carpels. Receptacle usually globular, often ovoid, rarely conical—sometimes varying much in the same plant—normally hairy. Carpels more numerous than in *R. Drouetii*, usually crowded and therefore laterally compressed. When quite mature and well developed the upper half of the dorsal margin forms a quadrant, and the top of the carpel is slightly convex, meeting the ventral margin in a small lateral apiculus or (failing that) at an acute angle. Under less favourable conditions the top is nearly straight or with a trifling concavity near the lateral apiculus. The carpels are normally hairy, very rarely glabrous. The young carpels of this species are ± hairy in the super-dorsal part, but in *R. Drouetii* are constantly glabrous. In some forms of *R. trichophyllus* the hairs are caducous and disappear at maturity. As a consequence it is not unusual to find—on the same plant—carpels, distinctly hairy, only slightly so, or quite glabrous. Fruiting peduncles short—about 2 to 5 cm.—thick, not exceeding the leaves at time of flowering but may do so slightly in fruit; most curved near the base, the rest nearly straight, not or only slightly tapering, often bifurcate at the apex with two receptacles (cf. *R. Drouetii*).

Distribution.—With a view to an ultimately complete record of the vice-comital distribution of the British Batrachia, I give herewith a list of the vice-counties from which I have seen specimens, and am very greatly indebted to Messrs W. P. Hiern, James Groves, R. L. Praeger, C. Bailey, and Dr G. C. Druce for the use of their splendid collections, and for their generous help in other directions; to Prof. Johnson for the loan of the specimens in the National Museum, Dublin, and to Mr R. S. Adamson and Mr A. J. Wilmott for original records.

R. trichophyllus Chaix:—C. 1-11, 13-41, 48, 49, 53-60, 62-64, 66, 69a, 69b, 70; (Scotland) 72, 73, 75, 76, 77, 80, 82, 83, 86, 88-90, 98-105, 107, 109-112; (Ireland) 1-19, 21-26, 28, 29, 32, 33, 35-40.

It will be noted that many of the Welsh counties and some of those in North and East of Scotland are still unrecorded.

I entirely dissent from the view (*Camb. Brit. Fl.*, vol. iii.) that it is possible to include under *R. trichophyllus* what British botanists now accept as *R. heterophyllus* and *R. penicillatus*—forms which differ not in degree only but in kind from *R. trichophyllus*. *R. Britannicus* (Rouy et Fouc. *Fl. Fr.* i., 69) appears to be a form of *R. trichophyllus* with distinctly petiolate upper leaves and carpels more hairy than usual.

6. R. DROUETII F. Schultz. *R. Drouetii* F. Schultz in *Archiv. Fl. Fr. et Allem.* i., 10, 1842, sine descript. Lloyd in *Ann. Société des Sciences naturelles Charente-Inférieure*, 71, 1888; in *Bull. Soc. bot. rochelaise*, 26, 1889; in *Fl. de l'Ouest* ed. 5, 6. Corbière *Nouvelle Fl. Normandie* 21, 1893; Rouy et Foucaud *Fl. Fr.*, 69, 1893.

R. Drouetii F. Schultz was first found near Angers by J. B. Drouet and communicated by him to F. Schultz, who named it *R. Drouetii* (*Arch. Fl. Fr. et Allem.*, 10, 1842, without description). Koch, to whom the plant was also sent, identified it with *R. paucistamineus* Tausch, and Schultz published this latter name in his *Fl. Gall. et Germ.* exsiccata no. 404, but afterwards rectified it when Koch discovered that the plant differed from *R. paucistamineus*. This explains why Drouet has given in the *Arch. Fl. Fr. et Allem.*, p. 51, the following description of *R. Drouetii* under the name *R. paucistamineus* Tausch. Description of *R. paucistamineus* Tausch by J. B. Drouet (*loc. cit.*):—" Tiges charnues, flottantes ou submergées, arrondies ou légèrement anguleuses, rameuses, allongées. Pétioles 3-fides, puis découpés en filaments nombreux, capillaires, mollement divergents; les supérieurs auriculés à la base. Pédoncules atteignant à peine ou dépassant peu les feuilles, réfléchis à la maturité. Fleurs petites (5-10 mm.), à pétales obovales, à peu près doubles des sépales glabres. Etamines 5-10, atteignant à peine ou dépassant peu les carpelles; stigmates falciformes. Carpels 5-25, petits, ovales-globuleux, brièvement ailés des deux côtés dans leur moitié inférieure, glabres jeunes finement chagrinés luisants, murs, légèrement ridés transversalement, à bec très grêle ou nul. Réceptacle ovale ou un peu conique hérissé, soyeux."

The original description of *R. paucistamineus* by Tausch in *Flora* vol. xvii., ii., 525, 1834, is much too vague—" Batrachium; caule abbreviato natante, foliis omnibus immersis petiolatis capillaceo-multifidis, floribus minimis sub-12-andris oligocarpis, carpellis hispidulis obtusis." —but an examination of authentic foreign examples (and particularly those in Hb. Paris, for which I am indebted to Mr Jas. Groves) shows that *R. paucistamineus* Tausch is not synonymous with *R. Drouetii* F. Sch., but an aggregate species of much wider range—including *Drouetii*, *trichophyllus*, and even large forms of our var. *submersus* so long as the flowers are not too large.

In *Bull. Soc. Bot. Fr.*, vol. 57, xxxv., 1910, M. Félix—the eminent French authority on the Batrachia—points out that the descriptions of *R. Drouetii* by Godron, Boreau, Du Mortier, etc., are much better known than Drouet's own description hidden in the *Archives Fl. Fr. et Allem.*, and attributed to an entirely different plant than *R. Drouetii*. It is from these varying descriptions that botanists have been trying to obtain a correct idea of Drouet's plant, and it is not to be wondered at that they have not succeeded. It has been left for Lloyd—*Fl. de l'Ouest*, ed. 5, 6; *Ann. des sciences naturelles de la Char.-Inf.*, 71, 1888, et *Bull. Soc. bot. rochelaise*, 26, 1889—to show the differences between *R. Drouetii* and *R. trichophyllus* and to fix, within the narrowest limits, the distinctive characters of the true *R. Drouetii* as authenticated by Drouet himself.

" *R. Drouetii* Schultz, exsicc. no. 404, Boreau, *Fl. du Centre.* Très voisin du *R. trichophyllus*, il en diffère surtout par les carpelles moins nombreux, glabres, lâches, c'est-à-dire espacés de manière que la moitié supérieure du carp. qui est renflée-arrondie, est tout à fait dégagée, tandis que dans *R. trichophyllus*, ils sont velus, serrés, comprimés, un peu aigus et imbriqués de manière à laisser voir seulement le côté extérieur du carpelle. Cette disposition donne à la tête de fruits un aspect différent, facile à distinguer. Les stigmates sont aussi plus étroits, en languette; dans *R. trichophyllus* ils approchent de l'ovale. Mêmes lieux que le precédent, auquel il est quelquefois mêlé, moins commun.

Obsv.—Plusieurs caractères auxquels les auteurs attachent de l'importance sont variables, ainsi: notre *R. Drouetii* n'est pas plus grêle d'un vert plus clair que l'autre, ses feuilles sont raides ou flasques selon la nature de l'eau, leur profondeur, leur situation ombragée ou non. les fleurs des deux espèces n'offrent pas de différence appréciable." (Lloyd, *loc. cit.*).

I have given the foregoing extracts at some length as they settle many points upon which both British and Continental botanists have been in doubt. It is clear that Drouet's plant possessed glabrous carpels, but unfortunately the term " glabrous " has been so loosely used by some writers that we are often not quite certain whether to understand it relatively or absolutely. However, the context makes it quite obvious that MM. Drouet, Felix and Lloyd intend the word to be used absolutely. In my own case it is always used in the same sense. and. on the contrary, if there are even a few hairs, the fact is stated.

It seems perfectly clear that *R. Drouetii* is quite distinct from *R. trichophyllus* and that, therefore, it should retain the original status given it by M. Drouet.

Its chief distinctions from *R. trichophyllus* lie in its earlier flowering, more slender and distinct habit, fewer—and therefore less crowded and more inflated—carpels, which are quite glabrous.

R. Drouetii is often difficult to separate from some forms of *R. trichophyllus*—as our past reports show. This is especially the case when dealing with robust specimens, for while the majority of British plants lack the rigid habit of that species and are relatively more slender, others are large and stout. Little reliance can be placed upon colour in separating these plants, although *Drouetii* growing in clear water is usually lighter green than *trichophyllus* under similar conditions, but it may be dull greyish-green, often olive, or even madder (in peat). There are no floating leaves. The submerged leaves are normally sessile or sub-sessile—upper often distinctly petiolate—with segments weak and collapsing or " feebly divergent " when taken out of the water. (Mr James Groves informs me that in Drouet's original specimen (Hb. Paris) the segments are distinctly diverging.) This character is often masked by incrustations of lime, mud or slime; and varies, too, with age. Upper stipules much adnate, often large and auricled. Flowers rather small, but seldom as small as those of *trichophyllus*; usually the narrow oboval petals are about twice the dark glabrous sepals. Stamens few—often about 10—variable in length, sometimes not exceeding the head of carpels. Receptacle usually oval or conical, longer than broad, invariably hispid. Fruiting peduncles relatively slender, short, normally not exceeding the leaves, sometimes bifurcated at the apex, with two receptacles. Carpels less numerous, more inflated, much rounded at the top, more stubby, often nearly spherical or shortly oval, glabrous.

In *R. trichophyllus* the fruits form a compact mass which is longer than broad. The numerous carpels are crowded one against the other and therefore much laterally compressed leaving only the exterior ribs clearly visible and showing the tops of the carpels slightly acute.

In *R. Drouetii* the carpels being much fewer are laxer, leaving the upper part free to develop. As a result the carpels are more thick-set, rounder and with little trace of the acute corner (where the upper dorsal and ventral edges meet) shown by those of *R. trichophyllus*.

Distribution.—C, 1-17, 19-30, 32-39, 41, 49-52, 54-71; (Scotland) 73-76, 79, 82, 83, 86, 88-90, 95-106, 108-111; (Ireland) 2, 12, 16, 18, 19, 21, 23, 26, 27, 31.

7. R. RADIANS Revel in *Act. Soc. Linn. Bordeaux*, xix., 120, fig. 1, 1853.

In my original paper (*l.c.*, 1918) I wrote—"Babington (*Manual* ed. 9, 6) and Hooker (*Stud. Fl.* ed. 3, 6) considered the plant a form of *R. trichophyllus* with floating leaves. Moss (*Journ. Bot.* lii., 117, 1914) follows Rouy and other Continental botanists in giving it varietal rank. At present I accept this view, but the more specimens I examine, the more I lean to the opinion so forcibly expressed by M. Felix in his Monograph on the Batrachia—*Bull. Soc. Bot. France*, vol. 60, p. 260—that *R. trichophyllus* never possesses floating leaves and that *R. radians* is a distinct species. He says, '*R. trichophyllus* only possesses capillary leaves. Never—and I insist on the word—never have I seen it, either living or in herbaria, with floating leaves.' At any rate, all the British forms of the so-called *R. trichophyllus* with floating leaves which I have examined are without difficulty referred to var. *radians* (Revel), var. *triphyllus* (Hiern), or *R. heterophyllus* Weber."

Ten years of careful and deliberate investigation have convinced me that *R. radians* is a well-marked and distinct species, falling naturally into the space between the two dissimilar forms, *R. trichophyllus* and *R. heterophyllus*, where there is ample room for another species.

It is intermediate in habit, in foliage and in flowers, and further evidence is afforded by the fact that continental botanists refer many of our forms of *R. heterophyllus* to *R. radians*, being unable to include them under their aggregate *R. aquatilis*.

R. radians Revel was first recorded as a British plant by Mr W. P. Hiern at the annual meeting of the British Association in September 1865. His plants were gathered in June 1864 at Silverdale, W. Lancs, and among his MSS. is a letter from A. Boreau (6/7/1865) having reference to one of these plants. Of this Boreau says "the foliage is absolutely the same as that of a plant I possess so named by Revel himself." So far as my own examination of authentic continental specimens goes, it confirms the claim of Mr Hiern for *R. radians* as a British plant.

R. radians Revel in *Act. Soc. Linn. Bordeaux*, xix., 120, fig. 1, 1853. The original description is:—"Caule fistuloso ramoso natante. Foliis submersis petiolatis multifidis laciniis capillaribus divergentibus, flaccidis, fluitantibus rotundato-orbiculatis, profunde divisis, inferne pilosis, cum segmentis radiantibus, primum dentato-lobatis, deinde, planta aetatem adultam adepta, laciniatis et tunc plerumque petiolulatis. Petiolis basi dilatatis, in vaginam membranaceam pilosam adhaerentum plus minus auriculatam abeuntibus. Pedunculis foliis brevioribus vel subaequalibus. Calice patente. Petalis obovato-cuneatis calice duplo circiter longioribus, albis, ad unguem flavis. Staminibus sub-18 ovariorum capitulo longioribus. Carpellis numerosis transverse rugosis plus minus apice (inferne tantum) hirtis, lateraliter compressis, obovatis, cum carina inferiore valde convexa, superiore vero basin versus depressiuscula, versus autum rostellum convexa, rugis ad depressionem convergentibus; rostello mediocri, crasso, oblique adscendente, paulo supra extremitatem externam diametri longioris fructus inserto. Receptaculo sphaerico dense setosa."

"Tige fistuleuse, rameuse, nageante. Feuilles submergées pétiolées, multifides, à laciniures capillaires divergentes molles, les flottantes arrondies circulaires, profondément divisés, poilues en dessous, à segments rayonnants, d'abord dentés-lobés, ensuite, dès que la plante est arrivée a l'état adulte, laciniés, et dans cet état ordinairement pétiolulés. Pétioles dilatées à la base en une gaine membraneuse, adhérente, velue, plus ou moins auriculée. Pédoncules plus courts que les feuilles ou les égalant à peine. Calice étalé. Pétales obovales cunéiformes, égalant deux fois environ la longueur du calice, blancs à onglet jaune. Etamines (15 à 18), plus longues que la capitule formé par les ovaires. Carpelles nombreux, ridés transversalement, plus ou moins velus au sommet en dessous, latéralement comprimés, obovales, à carène inférieure très convexe, la supérieure un peu déprimée vers la base et convexe dans la partie qui avoisine le style; rides convergeant vers la dépression. Bec médiocre, épais, obliquement inséré un peu au-dessus de l'extrémité extérieure du grand diamètre. Réceptacle sphérique, hérissé de poils épais." (Revel, *op. cit.*).

Later, Revel amended this description in his *Renonc. de la Gironde*, 8 et icone—and cited by A. Boreau in his *Flore du Centre de la France* ed. 3, ii., 11, 1857. In this he described the segments of the submerged leaves as "divergentes en circle"—a character well shown in some British specimens. In his *Flore du Sud-Ouest*, Revel further modified his opinion of the receptacle, which is there described as "ovoid." In my own experience this is the more common form, but it is remarkable how often—even on the same plant, the receptacle is nearly spherical or—on the other hand—distinctly longer than broad (cf. also *R. trichophyllus*).

Description.—All leaves are usually ± circular in outline, symmetrical in segment and regular in arrangement—a beautiful plant when carefully dried. Floating leaves rather thick, coriaceous, often hairy beneath and on the petioles; normally sub-circular, deeply divided into cuneate segments separated by radiant straight-sided sinuses, often extremely narrow, rarely very wide; basal sinus large and deep or narrow as the others. Occasionally they are reniform, tripartite, or even fan-shaped, having segments laciniate and petioled, or transitional. Submerged leaves usually dark-coloured, sub-circular in outline, regularly disposed, with short ± rigid, diverging segments like those of *R. trichophyllus*; smaller than in var. *trifidus*, more compact and much more uniform in shape and arrangement; not "commonly petiolate" but often nearly sessile, the petiole being shorter than its stipule. Occasionally, when submerged leaves are developed to the summit of the stem—in place of floral leaves—they are longly petiolate. Flowers medium-sized, much larger than those of *R. trichophyllus* and approximating to those of *R. heterophyllus* Weber. Fruiting peduncles usually very short (upper often about 2 cm. with lower longer), much shorter than the floating leaves they may subtend—occasionally nearly equalling them—rigid, strongly recurved below, nearly straight above, often at right angles to the stem. Receptacles spherical or ovoid, densely hairy with long hairs. The young carpels taper upward—both the dorsal and ventral margins being slightly concave—giving the upper part a "bottleneck" appearance. This largely disappears in mature fruit, but the dorsal margin usually retains a slight depression at the top which causes the carpel to be "narrowed above," and so readily distinguished from that of *trichophyllus*. "The carpels are ± numerous—reduced to 8 or 10 in certain forms. The depression in the upper keel is nearly insensible when their number diminishes." (M. Felix, *Bull. Soc. Bot. Fr.*, vol. 60, 1913.) In this country invariably hairy, but a glabrous form has been found in France.

Distribution.—I have seen specimens from the following counties or vice-counties:—England, 5, 6, 9-11, 12, 13-17, 20-24, 26-29, 31, 33, 34, 36-41, 50, 51, 55-58, 60, 69b. Scotland, 75-77, 80, 81, 85, 86, 89, 90, 97-105, 110. Ireland, 1, 16, 18, 21, 23, 26, 31, 34, 39.

Typical specimens are those from (1) Silverdale, W. Lancs, 15/6/65, W. P. Hiern, (2) Thame, Oxon, May 1915 [Ref. O.815], G. C. Druce. (3) Nailsea Moor, N. Somerset, 19/6/1900, and (4) Marsh ditches, Yatton, N. Somerset, 13/6/1900, J. W. White. (5) Quarry pool, Wickwar, W. Gloster, May 1915, J. W. White. See *Rep. B.E.C.*, 311, 1915. Mr White subsequently sent me representative sheets which left no doubt as to the identity of this plant.

8. Var. **Godronii** (Gren.). *R. Godronii* Grenier in F. Schultz *Arch.*, 172, 1850, name only. Form 19, *Godronii* Hiern, *l.c.*, 1871.

The adoption of this name is unfortunate, as having been first published without description and subsequently abandoned by Grenier himself in favour of *trichophyllus*. In my opinion, however, the plant seems much nearer to *R. radians* than to either *R. trichophyllus* or *R. Drouetii*, under each of which it has been placed. In many cases it is difficult to separate from *R. radians* except by its less robust habit and weaker submerged leaves, and appears to be best regarded as a slender form of that species. Boreau, *op. cit.*, puts it under *R. radians* and notes the following differences, "Le *R.* (*Batrachium*) *Godronii*, me semble différer par des proportions plus grêles, les fleurs moitié plus petites, les carpelles moins nombreux, à carène plus amincie." Floating leaves when well developed nearly circular, but less regularly divided and usually smaller than those of *radians*. More often, however, they are somewhat semi-circular in outline and truncate at the base, or with stalked and variously fissile fan-like segments. The submerged leaves may have either weak and sub-collapsing, or rigid and divergent segments. In the latter case they are always more irregular in form and arrangement than in *radians*. Usually ± petiolate and often having segments distinctly flattened and linear. Peduncles shorter than, or about equalling, the leaves, slender, often narrowed above. Receptacle ± rounded (occasionally rather long), and hairy. Carpels hairy as a rule, or nearly glabrous, often narrowed above. Flowers commonly small with petals up to 6-7 mm., thin in texture, faintly veined. Typical specimens were distributed by Miss I. M. Roper from Farnborough Common, Marksbury, N. Somerset, 20th May 1918, through the *W.B.E.C.*

Distribution.—England and Scotland:—4, 6, 10, 15, 17, 20, 21, 25, 29, 30, 34, 36, 38, 39 (unrecorded from Wales), 56, 58, 62-64, 75-77, 80, 86, 90, 97-105, 110, 111 (cf. with *radians*). Ireland:—5, 19, 23.

9. R. **heterophyllus** Weber in Wigg. *Prim. Fl. Holsat.*, 42, 1780. (*R. heterophyllus* Babington in *Ann. Nat. Hist.*, ser. 2, xvi., 393, 1855, non Hooker fil.).

A very variable species, having floating leaves normally nearly or quite circular, but sometimes less so and then resembling those of *peltatus*. Divided more than half-way into cuneate-approximate segments—typically wedge-shaped but may be rounded—variously fissile on the outer edge. Sometimes the segments are nearly sessile, or even stalked, and transitional leaves are frequently present. Submerged leaves with segments long, weak and collapsing. Flowers large with broadly cuneate-obovate 7-9 veined petals, not contiguous except in well-developed specimens, persistent—from 6 mm. to 1 cm. in length. Stamens many, exceeding the head of carpels. Receptacle conical (sometimes long and narrow), or spherical, hairy. Fruiting peduncles short, ± slender, slightly or not tapering, usually shorter than the floating leaves but occasionally about as long; not as a rule much curved above but sharply recurved at the base as the fruit ripens. Carpels glabrous, slightly hairy on the top, or "with numerous strong bristles."

10. Var. TRIFIDUS Pears. (*triphyllus* Hiern non Wallroth).

Floating leaves deeply divided into 3 sub-sessile cuneate segments with nearly straight or slightly hollowed margins and the outer edge usually cut into numerous deep divisions, often mere linear threads. Normally less completely circular than those of *radians* and with wider sinuses (the basal one often very wide) and frequently hairy below. Submerged leaves larger than in *radians*, more loosely trifurcate with divaricate segments, therefore less compact and more irregular in outline—not *trichophyllus*-like. Flowers of medium size, not large, petals about 8 × 5 mm., not contiguous, persistent. Stamens not numerous, about equalling head of carpels. Receptacles slightly longer than broad, ovoid, hairy. Fruiting peduncles scarcely tapering, short, not exceeding leaves, ultimately recurved and then patent. Carpels narrowed above, with rather long lateral beak, hairy or nearly glabrous (those of Wallroth's plant are "glaberrimis nitidis.").

11. Var. SUBMERSUS Bab.

A characteristic plant of salt marshes and tidal drains; very variable. No floating leaves. Submerged leaves with segments usually long, robust and sub-collapsing, forming ± dense tassels; or shorter and diverging to form irregular bushes. Flowers medium-sized (petals about 9 mm.), not large; often quite small (petals 4-6 mm. on even large specimens). Stamens usually many, sometimes few in small flowers; exceeding the head of carpels. Receptacle ovoid. Fruiting peduncles short (upper 2.5 cm. to 3 cm.) usually shorter than or equalling the leaves, but the lowest may be much longer and exceeding the leaves. As in *Drouetii* the peduncles are occasionally bifurcate at the apex. Carpels slightly hairy, nearly or quite glabrous. In my opinion many robust forms of *Drouetii* and *trichophyllus* have been hitherto wrongly referred to this variety.

12. R. PELTATUS Schrank *Baier Fl.* ii., 103. *R. aquatilis* var. *peltatus* Koch in Sturm. *Deutsch. Fl.*, fasc. 67, f. 7.

Normally a vigorous species producing floating leaves profusely in standing water. Floating leaves long stalked, reniform or sub-orbicular, divided nearly half-way into three obovate segments (the central much smaller than the lateral) which are frequently again rather less deeply divided into two, making the leaf appear five-fid. Forms occur in which these five segments are large, rounded, sub-equal, and sub-entire—f. *quinquelobus* (Koch). The segments of the typical *peltatus* leaf are much rounded at the base but in f. *truncatus* nearly straight. Submerged leaves with rather rigid diverging segments. Flowers large (up to 1⅛ in. in diameter with petals over ½ in. long !), petals broadly obovate-cuneate, contiguous, persistent, varying in size up to 15 mm. by 11 mm., sometimes very numerous, twelve or more. Stamens many, exceeding the head of carpels. Receptacle relatively small in size and spherical in shape. Fruiting peduncles long, tapering, normally exceeding, often only equalling, and occasionally shorter than the leaves. These varying lengths not infrequently occur on the same plant. Carpels usually hairy, only rarely glabrous.

13. Var. FLORIBUNDUS (Bab.).

Much nearer to *peltatus* than to *heterophyllus*, in my opinion, and extremely variable in aspect. Most commonly a robust plant, but slender forms occur which must undoubtedly be referred to this variety. Floating leaves normally sub-circular or circular (but may be reniform), sub-peltate, divided more than half-way into rounded segments, which are sometimes imbricate. Petioles characteristically very long and slender—rarely stout. Submerged leaves moderately long, with rather rigid diverging segments. Flowers usually few and large, with petals not contiguous, persistent; and numerous long stamens. Stigma often narrowly oblong. Receptacle spherical. Fruiting peduncles shorter, not or very slightly tapering, about as long as the leaves. Carpels very blunt at the top, and usually hairy, rarely glabrous.

f. TRUNCATUS (Koch). Floating leaves little more than a semicircle in outline, with the base truncate in a nearly straight line; feebly (or not at all) cordate. Sometimes the basal opening is inconspicuous and the base of the leaf curved upward from the petiole.

f. ELONGATUS (Hiern). A slender form having, essentially, very long (6-10 cm.) slender peduncles exceeding the attenuate petioles. Floating leaves extremely variable, sometimes having five segments, often like small *truncatus*. Carpels hairy.

f. QUINQUELOBUS (Koch)—" foliis natantibus quinquelobis, lobis non crenatis "—has 5 large, rounded, sub-equal leaf-segments with no trace of indentation.

f. RHIPIPHYLLUS (Bast.). Floating leaves truncate at the base, which is curved upward giving the leaf a fan-like appearance. The leaf usually has 3 lobes each of which is bi- or tri-lobulate.

f. LACERUS Druce (*Rep. B.E.C.*, 1918, 273) has the floating leaves irregularly cut into acute, wedge-shaped segments which often have their outer margins variously dissected into long comb-like processes.

14. R. PSEUDO-FLUITANS Baker & Foggitt, *Rep. Thirsk Bot. Exch. Club*, 1864. *R. penicillatus* Bab.

The name *pseudo-fluitans* has been responsible for much confusion, and in dealing with it we are faced by a curious difficulty. If we retain it as that of a species we clearly cannot cite it as of Syme, who in *E.B.* iii., 1863, puts it under the species *R. aquatilis* sub-sp. *peltatus* as ?var. *pseudo-fluitans*—querying as a synonym *R. pseudo-fluitans* Newb. mss. Indeed it is doubtful whether Syme's problematic variety should even be quoted as a variety under his name, although among his herbarium specimens is one marked in pencil " *pseudo-fluitans* " under *peltatus*. Whatever Newbould had to do with the form under discussion, I think it is generally agreed that as he did not publish any description, his name may be omitted from the literature of the subject. In the *Report of the Thirsk Botanical Exchange Club* for 1864 [published in 1865, and subsequently quoted in *Journ. Bot.* iii., 114, 1865] Messrs Baker and Foggitt quote the name as that of a species, and give what I think may fairly be regarded as a characteristic description within the meaning of the Laws of Botanical Nomenclature 1867-8. The provision as to a Latin diagnosis being necessary does not apply in this case, but it might be questioned whether the report of an Exchange Club is a sufficiently "public" medium. However, as the description was repeated in the *Journ. Bot.* this hypothetical difficulty is removed. The original description is as follows:—" *R. pseudo-fluitans* Newbould. In the new edition of *Eng. Bot.* Mr Syme (who places it under *R. peltatus* along with *R. floribundus* Bab.) says of this, 'It is a very remarkable plant and may be a distinct sub-species, as the Rev. W. W. Newbould inclines to think. Prof. Babington unites it with *R. heterophyllus*, with which it agrees in the weak, collapsing leaves, but in other respects it approaches *R. peltatus*, or rather *R. floribundus*, and is very possibly only a state of that plant induced by growing in running water. In habit it closely resembles *R. fluitans*, but has the segments of the leaves shorter, much less rigid, and less parallel; the stamens longer than the head of pistils, and the receptacle hispid.' Mr A. G. More sends us a supply of specimens from the neighbourhood of Dublin, and writes, 'The plant seems as well marked by distinctive characters as any other of the British Batrachian *Ranunculi*, except *fluitans*, *circinatus*, *tripartitus*, *hederaceus* and *coenosus*. To the general habit and appearance of *R. fluitans*, it joins the floating leaves of *R. peltatus*. Its submerged leaves are long and very flaccid, whip-like and much coarser than in any of the others except *fluitans*. In the streams of Ireland it appears to be not unfrequent, and to take the place which *R. fluitans* occupies in England.' " To this long extract from the *Thirsk B.E.C. Report* it is necessary to add further details from Syme's only partially quoted description (*E.B. l.c.*):—"Submerged leaves tassel-like, with segments very long and rather weak, collapsing. Floating leaves very rarely present, resembling those of *peltatus* or *floribundus*. Peduncles slightly narrowed upward, equalling or exceeding the leaves. Receptacle spherical."

Over half a century has elapsed since these descriptions were written and during that period the plant has been frequently distributed. I have been privileged to examine large numbers of authenticated specimens of it in the collections of Messrs J. Groves, G. C. Druce, W. P. Hiern, and C. Bailey—among others—and as a result, submit the following description:—" A well-marked and readily recognised form, with the habit of a gigantic *truncatus*. Normally a very robust plant with a fat, succulent stem. Floating leaves present or absent. When present—which is frequently (by no means rarely) the case—they resemble those of very large *truncatus* or—less commonly—of *peltatus* or *floribundus*. Petioles very long, up to 6 in. in some cases. Often there are no floating leaves, especially in English specimens. Submerged leaves sub-sessile—sometimes apparently stalked when at the end of a short branch—simulating those of *R. fluitans* but with segments shorter (commonly up to 4 in.), more numerous, much less rigid and less parallel; coarser, and collapsing into dense tassels or (more rarely) sub-parallel and whip-shaped. (In some Irish specimens with floating leaves, the submerged leaves have segments over 6 in. in length). Flowers very large, with broadly obovate-cuneate persistent petals. Stamens numerous and exceeding the head of carpels. Mature carpels normally very bristly and very blunt. Peduncles very long (up to 6 in. or more), thick, equalling or exceeding the leaves (not infrequently in specimens with floating leaves and flowers as described above, peduncles occur which are much shorter than the leaves), usually not tapering for the greater part of the length but only near the top. Receptacle spherical and very hairy."

15. Var. MINOR Pears. (*pseudo-fluitans* Hiern p.p.).

A much more slender plant than the preceding, no floating leaves, submerged leaves variable, having segments sometimes short (3-5 cm.) and ± divergent—especially in standing water—at other times long (6-10 cm.) and sub-collapsing (usually in rivers). Fruiting peduncles long (up to 10 cm.), always relatively slender, equalling or exceeding the leaves—not infrequently twice as long or even more. Flowers much smaller than in the type. Carpels hairy or nearly glabrous. Receptacle hairy.

R. pseudo-fluitans is normally found chiefly in rivers, and has been recorded for 55 of the British vice-counties. In Ireland—where *R. fluitans* is virtually absent—it is particularly abundant and has been gathered in 32 of the 40 county-divisions. The Irish examples are often extremely fine, having truncate leaves up to 4.2 cm. across, flowers often 3 cm. in diameter, with petals 15 mm. long and 12 mm. across at their widest part. This gives to the petals a much more fully rounded appearance than the above description would seem to include.

16. R. SPHAEROSPERMUS Boiss. & Blanche in Boiss. *Diagn.*, ser. ii., n. 5, p. 6 (1856). *R. aquatilis* L., var. *sphaerospermus* Boiss. *Fl. Orient.* i., 23. *R. aquatilis*, form *sphaerospermus* Hiern in *Journ. Bot.*, 47, 1871.

The original description (*l.c.*) is as follows, "*R.* foliis uniformibus omnibus in lacinulas filiformes breves rigidulas undique divergentes divisis, pedunculis crassis folia superantibus tandem recurvis, petalis albis basi flavis calyce reflexo 2½ plo. longioribus late obovatis 9-11 veniis, staminibus numerosis carpella superantibus, spica carpellorum globosa receptaculo hirto carpellis subglobosis dorso vix carinatis rugosis obtusis apice dorsum versus aculeato-hirtulis, stylo brevissimo crassiusculo ad extremitatem diametri majoris carpelli sito."

This is a well-marked and characteristic plant of rivers, canals and tidal waters; having a restricted range in some 10 vice-counties of the S.-E. of England. The British plant is normally very dark in colour, having a stem more or less stout, often succulent and fat. Floating leaves absent—even in still water—submerged leaves uniform in shape, regularly disposed, with short, rather rigid diverging segments forming sub-spheres or dense tufts. These characters of the submerged leaves readily distinguish this species from any form of *pseudo-fluitans*—the segments of the submerged leaves in *sphaerospermus* are much shorter, more numerous and far more divergent than in that species, giving the leaf a sub-circular outline in many cases, and in others a shortly and densely tufted appearance. In this connection it is interesting to recall Boissier's original description—given above—" foliis uniformibus omnibus in lacinulas filiformes breves rigidulas undique divergentes divisis," and the fact that in Boissier's type specimen (No. 1105) which Mr W. P. Hiern has seen, the leaves are small and " globose in outline." Flowers few, large, petals 12 mm. or more, not usually contiguous. Stamens numerous, long. Receptacle globular, hairy. Fruiting peduncles stout (often thick), long (usually 2 in. to 2½ in.) exceeding the leaves, curved below in fruit. Carpels hairy, very inflated and rounded outside. In giving *R. sphaerospermus* specific rank, I do so on account of its strong individuality and the difficulty of putting it under any other species. It has been often confounded with var. *submersus*, but differs from that in its larger flowers, shorter leaf-segments and fruiting peduncles normally twice as long.

The uniform absence of floating leaves under conditions when they should be readily and abundantly produced is, I think, important, and appears to readily separate *sphaerospermus* from any form of *peltatus*. To me it occupies an intermediate position between *peltatus* and *Baudotii*—indeed some of its forms might readily be mistaken for f. *marinus*, but for their larger flowers and more hairy carpels, and this applies equally to Boissier's type specimen (No. 1105) already mentioned.

The limited range of distribution seems a further argument in favour of its specific status. I give herewith a few of the localities from which good examples of this species have been collected. The best I have examined came from R. Marram, at Welwyn, Tewin and other places, and were collected by J. B. Blow or H. Groves in May, June and July 1875. These stations are in Hertfordshire. Other typical specimens are from Halton Canal, Bucks, June 1913, G. C. Druce; Cuxham, Oxon, June 1915, G. C. Druce; Canal at Broadoak, Odiham, Hants, 10/5/83, C. E. Palmer; R. Stour, Dorset, in still water, Rev. R. P. Murray, August 1891; Little Stoke Ferry, R. Thames, Berks, W. P. Hiern; Arundel, W. Sussex, 27/5/12, J. Groves; near Mudham, W. Sussex, June 1917, G. C. Druce; near Brasted, Kent, 19/4/24, R. W. Robbins.

17. R. Baudotii Godron *Essai* in *Mém. Soc. Roy. Nancy*, 21, fig. 4 (1839) 1840. Bab. *Man.* ed. 9, 7. *R. Baudotii* [Godron ampl.] Syme *Eng. Bot.* i., 24 (1863). *R. Petiveri* var. *minor* Koch *Syn.* ed. 2, 13 (1843). *R. confusus* Godron in G. et G. *Fl. Fr.* i., 22 (1847). *R. marinus* Hooker fil. *Stud. Fl.* ed. 3, 5 (1884). *Batr. marinum* Fries *Fl. Suec. Mant.* iii., 51 (1842). *Batr. salsuginosum* Dumort. *Monogr. Batr.* 4 (1863).

The name *R. obtusiflorus* has been suggested for this species (*Journ. Bot.* lii., 117 (1914), but the reasons there given for its adoption are not convincing. The name was first given by De Candolle to a variety of *R. tripartitus*—*R. tripartitus*, var. *obtusiflorus* DC., 1918—based upon an illustration by Petiver (*Engl. Herbal*, t. 39, fig. 1, 1713). Realising the crude, diagrammatic or conventional character of so many of these earlier herbal drawings it seems impossible to be satisfied that the one in question accurately represents the plant the artist had before him or, that 200 years afterwards anybody could certainly identify the species—especially of *Batrachium*—which it is supposed to represent.

R. Baudotii is a very distinctive species, usually maritime in these islands but not invariably found in brackish water. Normally a robust plant with a broad stem and floating leaves somewhat resembling those of *peltatus* in shape, but (on an average) smaller, much more deeply divided—into three nearly sessile or even stalked segments, more uniform in size, the central relatively larger, the lateral with fewer crenatures than in *peltatus*. The floating leaves are often transitional—divided into linear threads 1 mm. or more in width—or entirely absent. They vary greatly in size—a specimen from "Burnham-in-Crouch, Essex, 16/6/94, H. Groves," has floating leaves 4 cm. in diameter. The petioles are usually slender and strongly contrasted with the thick peduncles. Submerged leaves with rigid, markedly divaricate capillary or linear segments. Flowers of medium size or small—much smaller than those of *peltatus*, as a rule. Petals usually less than 10 mm. in length. Stamens numerous, shorter than, or equalling the head of carpels. Receptacle when mature ovoid-conic, longer than broad, sometimes long-conic; more or less hairy. Fruiting peduncles very long (5-10 cm.), stout, tapering, usually much exceeding the leaves, strongly arched below (or throughout), often with a double curve. Carpels nearly or quite glabrous—occasionally a few odd bristles—very numerous. This species is very easy to determine when in fruit. No other British species has such a large elongate receptacle upon which grow so many glabrous carpels. The beak shows upon 2 sides two remarkable folds which are prolonged transversely across the faces of the carpels and persist till maturity.

f. MARINUS (Fries). Merely a submerged form of *R. Baudotii* destitute of floating leaves. Usually a robust plant with a fat and succulent stem, but occasionally slender. Submerged leaves with short, rigid diverging segments—often the leaves are sub-circular in outline and regularly disposed. Flowers usually small (petals about 7 mm.); in robust specimens, medium-sized. Fruiting peduncles long, exceeding leaves—sometimes very long, even 12-14 cm. ! Normally stout, but sometimes slender. Receptacle and carpels as in type. Stamens shorter than head of carpels.

f. CONFUSUS (Godron). Differs from *R. Baudotii* in being normally a more slender plant, with long peduncles less stout and less curved than in that species—often very slender and nearly straight. Stamens usually well exceeding the head of carpels. The character of the carpels as being "narrowed upward" is difficult or impossible to make out, and therefore of little value. Many plants so labelled cannot be separated from *R. Baudotii*, in my opinion.

18. R. TRIPARTITUS DC. *Icon. Pl. Gall. Rar.* i., 15, t. 49, 1808. *R. tripartitus*, a. *micranthus* DC. *Regn. Veg. Syst. Nat.* i., 234, 1818. *Batr. tripartitum* S. F. Gray, *Nat. Arr. Br. Pl.* 2, 721, 1821. *R. hydrocharis*, A. *heterophyllus*, γ. *tripartitus* Spenn. *Fl. Frib.* 1829.

The name *tripartitus* has been given to at least 5 different plants—(1) *R. tripartitus* DC. (2) *R. tripartitus* Auct. Brit. = *R. lutarius* Bouvet = *R. intermedius* Bab. non Knaf. (3) *R. tripartitus*, var. *obtusiflorus* DC. = *R. tripartitus* Nolte (both cited by Koch as synonyms of *R. Petiveri*) = *R. Baudotii* (Godron ampl.) Syme E.B. i., 24, 1863. (4) *R. aquatilis*, var. *tripartitus* Koch Syn. ii., 1835 = *R. Petiveri*, var. *major* Koch Syn. iii., 10, 1843 = *R. triphyllos* Wallr. (5) *R. tripartitus* Dubourg d'Isigny = *R. Lenormandi* F. Schultz.

A rare and critical species. Stem 1-5 dm., extremely slender, but comparatively strong, simple or slightly branched. Floating leaves bright green and shining when fresh, forming a rosette on the surface of the water, and readily distinguished by their colour from those of *R. lutarius*. When dried they become either yellowish (or brownish)-green. Small—often extremely so—symmetrical, with long (3-5 cm.), and very slender petioles; deeply and regularly divided into 3 cuneiform segments separated by relatively wide sinuses with nearly straight sides. Segments very regular in outline—with 3 or 4 rounded crenatures—central segment usually as long as the lateral and only slightly smaller, with 3 rounded crenatures, or, in very small leaves, entire. Submerged leaves few, distant, extremely slender; when normally developed having remarkably fine, truly capillary, segments—yet usually ± divergent, but sometimes completely collapsing. Stipules well-marked, often conspicuous, delicate, transparent, with large auricles; upper with free or nearly free rounded ends. Flowers minute and inconspicuous. Petals minute (3 mm.), oblong, rather acute at the apex, equalling or scarcely exceeding the calyx, very fugacious. Fruiting peduncles very slender, usually shorter than or equalling the leaves, not or slightly tapering, ultimately recurved. Receptacle very small, roundish, hairy. Carpels few, obovate; when mature and well-developed most inflated at the top and often having the small lateral mucro below the summit of the carpel. More frequently, however—especially in specimens gathered too early—the carpels are most inflated in the middle and slightly narrowed at the tip; very rugose, glabrous and sometimes sub-petiolate.

Distribution.—In England only from W. Cornwall (1), E. Cornwall (2), and S. Devon (3). In Ireland only from Co. Cork.

I have seen the following authentic specimens:—

Hb. Groves.—W. Cornwall, Mullion, J. Cunnack, 1879. E. Cornwall, Innes Moor, near Roche, R. V. Tellam, 1876; near Wadebridge, Clement Reid and Dr Vigurs, 1906. Co. Cork, Baltimore, R. A. Phillips, 1896.

Hb. Hiern.—E. Cornwall, Innes Moor, near Roche, R. V. Tellam, June 1877. W. Cornwall, Kynance Down, The Lizard, Miss R. E. Carr Smith, 30th May 1910. S. Devon, Knighton Heath, Hennock parish, Miss C. Ethelinda Larter, F.L.S., 9th May 1914; and from same station, W. P. Hiern, M.A., 29th April 1916.

Hb. Barton.—E. Cornwall, ditch at Castle Killibury, Wadebridge, C. C. Vigurs, 19/6/07. Miss C. E. Larter very kindly sent me fresh specimens from the S. Devon station in May 1920.

Among the contents of a parcel of plants recently received by me from Mr E. B. Bishop, Secretary of the Godalming Natural History Society, were several Batrachia of very considerable interest. One was a typical example of *R. sphaerospermus*—'near Brasted, Kent, 19/4/24, R. W. Robbins'—but the most outstanding was a fine specimen of *R. tripartitus* DC., var. *submersus* Godr. in Gren. et Godr. *Fl. Fr.* i., 20 (1848). This was collected by Mrs C. L. Wilde from a 'pool near Predannach, Lizard, Cornwall, v.-c. 1, 4th June 1924,' and was most carefully mounted. As this is the first record of this variety for Britain, the plant has been sent to the Herb. Brit. Mus. for vouching purposes. The original description in *Flore de France* is meagre and requires amplification. I therefore append the following details of the plant in question.

19. R. TRIPARTITUS DC., var. SUBMERSUS Godr. ampl.

Stem over 2 ft. (6.2 dcm.) in length, very slender; when dried shining, straw-coloured; simple or slightly branched, no floating leaves, submerged leaves few, distant—often several inches apart—extremely slender, petiolate, bi- or tri-furcate, with exceptionally fine truly capillary segments of considerable length and uniformly divergent. (These ultimate segments are much more delicate than those of any other Batrachian species.) Stipules well-marked but less conspicuous than in the type. Flowers minute and inconspicuous, few in number. Petals minute, not exceeding 3 mm., oblong, not obovate, but narrowed from the middle to the apex, almost twice as long as the very short calyx, more persistent than in the type. Fruiting pedicels extremely slender and very long—1½-4 in. (4-10 cm.), very much longer than the leaves, at maturity very strongly curved throughout their entire length forming more than a semi-circle or semi-ellipse. All pedicels surmounted by a tiny but well-developed head of fruits. The carpels are few in number—always the case in this species—usually 4-5, very plump and well-formed, almost perfectly elliptical in outline, with a very minute lateral mucro below the level of the summit of the carpel; very rugose, shining and quite glabrous. The plant is clearly not a hybrid, there is not the slightest evidence of the influence of any other species and all its characters are those of *R. tripartitus*, modified by habitat conditions—chiefly deeper water. Mrs Wilde also submitted some excellent examples of the type *R. tripartitus* from a new station—"Moorland pools by hut circles, Penhall, Mullion, W. Cornwall, v.-c. 1."

The great difficulty of floating-out and pressing these plants when on holiday is possibly the reason why members so seldom collect them then. In my own experience 2 drawing-boards (sufficiently large to take 16 × 10 sheets), a quire of blotting-paper—eked out with discarded daily newspapers—and 2 long pieces of very stout window-blind or picture cord—sufficiently long to go round the boards twice, and with a running noose at one end—are all the apparatus required. The difficulty of floating-out can usually be overcome by means of the bath, a foot-bath, washing-basin, tub or even the horse-trough!

A vasculum containing a little water will keep the plants fresh even through a hot summer day. (Why do makers always paint a vasculum black?)

20. R. LUTARIUS Bouvet. *Batrachium lutarium* Revel in *Act. Soc. Linn. Bordeaux* xxv., 413, t. 4, 1865.

This species has often caused difficulty both in this country and on the Continent. Collectors frequently submit specimens which bear no resemblance to it, and I would suggest that if they first got a good visual impression of *R. tripartitus* DC. from the examination of a typical herbarium example of it, and then looked out for a glorified edition of this—so to speak—they would be less liable to make mistakes in its identification.

The status of this plant continues to give rise to attempts to include it as a variety of other species. In *Bull. Bot. Soc. Fr.*, 1926, 81-3, M. Felix makes the plant a variety of *Ranunculus* (*Batrachium*) *Lenormandi*, var. *lutarius* (Revel). Others have previously made it a variety of *R. tripartitus*, and as there appears to be plenty of room for another species between these two very dissimilar species—*R. tripartitus* and *R. Lenormandi*—we consider that the wisdom of Messrs H. & J. Groves in consigning it to an intermediate specific position between them is amply justified. Although quite distinct from *R. tripartitus* and having a much wider distribution, *R. lutarius* is appreciably nearer to that species than to *R. Lenormandi* and we cannot agree to its inclusion under this latter species as a variety.

Taking the list of British Batrachian species in the order given in the London Catalogue (ed. 11, 1925), all the species preceding *R. lutarius* possess submerged leaves; those following it have no submerged leaves. In *R. lutarius* itself they are commonly absent, but occasionally present and distinctive, which is not the case in *R. Lenormandi*. *R. lutarius*, too, often possesses transitional leaves which I have not yet seen in either *R. tripartitus* or *R. Lenormandi*. The leaves of *R. lutarius* are quite different in shape to those of *R. Lenormandi* and my experience is quite the opposite to that of M. Felix, who states that these two species are often confounded; I have repeatedly had *R. lutarius* mistaken for *R. tripartitus*, *R. Baudotii* or even *R. peltatus* but never for *R. Lenormandi*.

In addition to the differences already mentioned, there are others which, in our judgment, are conclusive. *R. lutarius* has a constantly hairy receptacle, but in *R. Lenormandi* it is almost always glabrous. The carpels, too, are very distinct, those of *R. lutarius* when mature and well-developed being longer and having very frequently an appreciable curve in the basal portion, toward the side surmounted by the beak, giving the whole carpel a twisted appearance. The carpels of *R. Lenormandi* are normally uncurved. Moreover, the distribution of the two species—in this country, at any rate—is quite distinct, *R. lutarius* being confined (with one exception, Anglesey) to the south of England and Wales—16 vice-counties only—whereas *R. Lenormandi* is generally distributed over both England and Wales and extends into Scotland—71 vice-counties. Neither Revel (*l.c.*) nor M. Felix (*l.c.*) makes any reference to the submerged leaves of *R. lutarius*, but occasionally these are indubitably present and very distinctive. Their presence—even though rare—is a further proof that the plant has no relation to *R. Lenormandi* and strengthens the weight of evidence in favour of the position assigned to it in Britain.

R. lutarius Bouvet in *Bull. Soc. Angers* for 1873, 96,1874. *R. tripartitus* Auct. Brit. *R. lutarius* Bouvet, fide H. & J. Groves in *Journ. Bot.* xlv., 452, 1907. Form *intermedius* (Hiern) in *Journ. Bot.* ix., 67, 1871, excl. syn. Knaf. *Batr. intermedium* Nyman Syll. Fl. Europ., 175, 1854-5. *Batr. lutarium* Revel in *Act. Soc. Linn. Bordeaux* xxv., 413, t. 4, 1865. *R. intermedius Bab. Man.* ed. viii. *R. lutarius* (Bouv.) *Bab. Man.* ed. ix., 1904 (H. & J. Groves). Revel's description (*l.c.*) is as follows:—" Tige fistuleuse, rameuse, rampante, vivant dans le limon, radicante, attachée au sol par de longues fibrilles radicales, opposées aux feuilles, celles-ci toutes reniformes, au peu arrondies orbiculaires, émarginées, presque jusqu'au milieu, à bords de l'échancrure tantôt éloignés tantôt rapprochés et presque contigus, lobés à 3-5 lobes crénelés, ordinairement non contigus à la base; surface inférieure des feuilles parsemée de quelques poils apprimés, ou glabres; pétioles dilatés à la base en une gaîne membraneuse, adhérente, auriculée, inserés en dessous des feuilles, à la base de l'échancrure; pédoncules plus courts que les feuilles, ou les égalant à peine; sépales obtus, scarieux, étalés; pétales obovales en coin, égalant deux fois et demi environ la longueur du calice, blancs à onglet jaune; carpelles nombreux, ridés transversalement, latéralment un peu comprimés, obovales, à carène inférieure très convexe, la supérieure presque droite, un peu convexe dans la partie qui avoisine le bec: rides sinueuses, brisées, un peu courbées, bec médiocre, obliquement ascendant, recourbé à partir du milieu mais ordinairement écourté par le milieu à maturité des carpelles, inséré au peu au-dessus de l'extrémité du grand diamètre; réceptacle sphérique, hérissé de poils. Mai, Juin. Terrain limoneux.

Obsv.—La présence des poils que l'on remarque quelquefois sur les sépales, sur les pédoncules, sur les pétioles et sur leurs oreillettes, ne m'a pas paru assez constante pour au faire mention."

In the *Cambridge Flora*, vol. iii., Dr Moss includes *R. lutarius* (? Bouvet *loc. cit.*)=*B. lutarium* Revel (1865), under *R. tripartitus* DC.

He admits (*Journ. Bot.* iii., 116, 1914) that he has seen no authentic specimen of Revel's plant, and from other indications it is apparent that he is unacquainted with it. Moreover, it is difficult to understand why he should query the author's name. In *Journ. Bot.* xxxviii., 135, 1900, Messrs H. & J. Groves say, " We are indebted to Herr Freyn for suggesting the identity of the British plants with *B. lutarium* Revel, described and figured in *Act. Soc. Linn. Bord.*, 1865 (p. 413, pl. 4). We have compared them with specimens of *B. lutarium* from the original locality (La Teste, Gironde), and we feel satisfied that they are the same. Revel's species was, as far as we have ascertained, first placed in *Ranunculus* by M. Georges Bouvet, and M. Bouvet has kindly given us the reference to the original publication of the name in *Bull. Soc. d'Etudes scient. d'Angers* for 1873 (1874), p. 96." The name, therefore, should stand, and as the plant is, in my judgment, quite distinct in character and distribution from *R. tripartitus* DC., it is entitled to the specific rank originally accorded it.

A much more robust plant than the preceding. Stem fistular, usually much branched, glabrous except at the nodes and rooting at the lower of these. Floating leaves resembling those of *R. tripartitus* DC., but larger (up to 1 inch wide), reniform or three-fourths circular, less deeply divided into broader segments having markedly rounded edges. Segments 3, large, symmetrical, cuneate-obovate, central usually only slightly less than the lateral, broad at the top (with 3 nearly semi-circular crenatures), narrowed below. Each lateral segment (usually with 4 similar crenatures) separated from the central by a narrow sinus. Lower surfaces sparsely covered with adpressed hairs, or glabrous. Submerged leaves commonly absent, rarely present, then few in number, less frequently forked and having rigid segments distinctly flattened, of an appreciable width and ± diverging. Usually there are some transitional leaves present also, and these I have not seen in *R. tripartitus*. Stipules large, well-developed and conspicuous. Flowers very small for so robust a plant, with small, narrow oboval petals, up to 2ce the sepals, when well-developed 6 mm. long, but usually less. The colour of the petals is white—often pinkish when dried—with yellow base. If held up to the light and looked through they often appear nearly " wholly white," and may be mistaken for those of *R. ololeucos*, but placed upon absolutely white paper and seen by reflected light, the yellow tinge of the lower portion is at once apparent. Stamens very few (6-10), about equalling the head of carpels. Fruiting peduncles usually much shorter than the leaves, ultimately recurved. Receptacle more or less hairy. Carpels fairly numerous, unequally obovate, much inflated above, regularly and strongly wrinkled transversely, keeled, with a prominent terminal beak (lateral or nearly central); glabrous.

Distribution.—In England from all the counties south of a line joining Bristol Channel and the Thames estuary—excepting Somerset and Isle of Wight—*i.e.*, 1-4, 7, 8, 9, 11, 14, 15, 16, 17. In Wales, from Glamorgan 41, Brecknock 42, Pembroke 45, and Anglesey 52.

21. R. LENORMANDI F. Schultz in *Flora* xx. (ii.), 726, 1837. *Batr. Lenormandi* Fries *Sum. Veg. Scand.* i., 139, 1846, ex Nyman. *R. homoiophyllus* Moss non Tenore.

Sten normally robust, floating. Floating leaves very variable in size, usually larger, more rounded and crenate than in *R. hederaceus*; orbicular-reniform, not spotted and as a rule only slightly divided (rarely deeply) into three very rounded cuneiform segments narrowest at the base, with broad rounded crenations. Flowers up to ½ in. in diameter with narrow oblong petals (5-6 mm.) not nearly contiguous, up to twice as long as the sepals, with white claw. Receptacle glabrous, very rarely with a few hairs. Carpels more numerous than in *R. hederaceus*, unequally obovate, often acuminate at the top with a more or less curved beak; glabrous.

22. R. HEDERACEUS Linn. *Sp. Pl.*, 556, 1753. *R. hederaefolius* Salisb. *Prodr. Stirp.*, 373, 1796. *Batr. hederaceum* S. F. Gray *Nat. Arr. Brit. Pl.* ii., 721, 1821. Dumort. *Prodr. Fl. Belg.*, 127, 1827.

Stem creeping and rooting. Leaves broadly reniform (usually with semilunar black patches), divided into 3-5 shallow, more or less angular segments broadest at the base and usually entire. Not infrequently the segments are somewhat broadly rounded and the leaves simulate those of *R. Lenormandi*. Stipules narrower and more adnate than in that species. Flowers very small with petals scarcely exceeding the sepals, three-veined, not contiguous, with white claw. Receptacle glabrous or rarely with a few hairs. Carpels normally rounded at the top and laterally mucronate—those of *R. Lenormandi* are usually more numerous, more often shortly acuminate at the top and with a perceptibly curved beak. The carpels of both species are commonly glabrous.

R. omiophyllus Tenore *Fl. Neapol.* iv., 338, 1830, seems to be merely a floating form of this species.

THE FLORA OF FOULA.

W. B. TURRILL, D.Sc., F.L.S.

The island of Foula is the most westerly of the Shetland (or Zetland) group. It lies 27 miles west of Scalloway, and 16 miles west of the nearest point of Mainland. It is 3½ miles long and 2½ miles broad. The highest point is the Sneug (Norse, Snjoog, "hill top") which attains 1373 feet.

So far as it has been possible to trace, the history of botanical studies on the existing vegetation and flora of Foula is meagre. W. H. Beeby visited the island at the end of August or the beginning of September 1887 [see *The Scottish Naturalist*, New Series iii., 209 (1888)], but was only two hours on land. It is uncertain how many plants he collected but he only records (*l.c.*): *Spergula arvensis* L. var. *sativa* ["extends to the top of the Sneug, Foula (c. 1400 feet), where a few plants were seen"], *Cornus suecica* L. ["Near the top of the Sneug (c. 1400 feet), on island of Foula. Sparingly, and only barren plants, seen"], *Salix herbacea* L. ("common on the hills of Foula, at 1000-1400 feet), and *Agrostis canina* L. var. *mutica* Gand. (t. Hackel) ("On the Sneng, island of Foula"). That other plants than these were collected by Beeby on Foula is proved by Wettstein's quotation of Foula specimens from Herb. Townsend as the basis of the original description of *Euphrasia foulaensis* [Wettstein, *Monographie der Gattung Euphrasia*, 140 (1896)]. The only specimens quoted from Foula by Druce ["Flora Zetlandica," in *Report Bot. Soc. and Exch. Club*, 1921, 457 (1922), and "Additions to the Flora Zetlandica," opus cit., 1924, 628 (1925)] are those of Beeby quoted above. Peter Gear, the postmaster, remembers Beeby's visit.

About 1902 a botanist is said to have "appeared" on the island and pitched his tent behind Mogill. He showed the laird some rare plants he had found. Details of this visit are lacking and no published paper on it has been found.

Thomas Isbister, in Leiraback, told Gladstone that he accompanied a man* who came to dig peat in search of the remains of trees. They seem to have found only the remains of birch and juniper. Thomas Isbister said the juniper still grows on the island, below the Flick Locks (c. 900 feet) but no specimens are known.

During the last week of July and the first week of August 1928 Mr J. Gladstone remained on Foula and spent the fortnight botanising. His collection of 129 species of Phanerogams and Vascular Cryptogams has been presented to the Kew Herbarium, where, like his St Kilda collection of 1927, it forms a valuable addition to the rapidly increasing numbers of British plants. Mr Gladstone has also supplied very valuable data on the plants of Foula, and these have been incorporated in these notes.

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*This was probably F. J. Lewis (see below).

SYSTEMATIC LIST.

Caltha palustris L. July 25. Nr. 70.

Ranunculus acer L. Scarce, July 27, Nr. 52; a scarce weed on former croft land, August 4, s.n.

R. flammula L. July 27, Nr. 47; July 29, Nr. 23; Hametoun, August 4, s.n.

Brassica oleracea L. Washed down the Ham Burn, August 4, s.n.

Cardamine pratensis L. July 26. Nr. 81.

Cochlearia officinalis L. Grows on the sand at Ham Voe and said to have a pink flower, August 5, s.n.; Gaada Stae, July 24, Nr. 50.

Raphanus raphanistrum L. var. *flavum* Druce. July 30, Nr. 11.

Viola riviniana Reichb. Uncommon, seldom flowers, July 30, Nr. 87.

Polygala vulgaris L. (agg.). July 29, Nr. 22.

Cerastium tetrandrum Curt. Gaada Stack, July 24, Nr. 36.

C. vulgatum L. var. *alpinum* Gren. Everywhere on the cliffs, in flower and fruit, July 31, Nr. 111.

Lychnis (Melandryum) alba Mill. Freyers, on the sea-shore, August 6, s.n.

L. (Melandryum) dioica L. July 26, Nr. 79.

L. flos-cuculi L. July 25, Nr. 65.

Sagina maritima Don. On the craigs below the Hall, August 5, s.n.

S. procumbens L. July 30, Nr. 12.

Silene maritima With. Gaada Stack, July 24, Nr. 75; July 26, Nr. 75a. Stack of the Gaads, August 4, s.n.

Spergula sativa Boenn. Largest specimen in the corn, Nrs. 15, 16, July 30. A small specimen, Nr. 17, may be the same but is too young for me to be certain.

Stellaria media Vill. A very plentiful weed in the corn, July 31, Nr. 102.

S. uliginosa Murr. In peaty water, July 30, Nr. 83.

Montia fontana L. (*M. lamprosperma* Cham.). July 24, Nr. 56.

Radiola linoides Roth. (*Radiola radiola* Druce). Grisigarth, c. 100 ft., July 29, Nr. 20.

Lotus corniculatus L. f. *grandiflora* Druce. July 24, Nr. 55.

Trifolium pratense L. Near Gossa meadow, one large plant and a few elsewhere, rare, August 1, Nr. 115.

T. repens L. Everywhere, July 31, Nr. 92.

Vicia cracca L. Near Whirly Knowe, not in the corn, July 30, Nr. 10.

V. sepium L. Leiraback, an uncommon weed, said to have come in with seeds, July 30, Nr. 9.

Potentilla anserina L. Sparingly in the low ground, August 2, Nr. 116.

P. erecta Hampe. July 28, Nr. 42.

P. (Comarum) palustris Scop. Sparingly in the north and south ends of the island ditches, July 31, Nr. 105.

Spiraea ulmaria L. Ham Voe only, July 30, Nr. 26.

Sedum roseum Scop. Stack of the Gaads, August 4, s.n.

Drosera rotundifolia L. North end, July 31, Nr. 104.

Callitriche stagnalis Scop. In a few peaty streams, growing very luxuriant, July, 30, Nr. 87.

Epilobium palustre L. July 29, Nr. 27.

Angelica silvestris L. July 30, Nr. 14; small specimens without flowers and fruits. Freyers, August 6, s.n., is probably this.

Hydrocotyle vulgaris L. In a very shallow sheet of water, July 31, Nr. 108.

Cornus suecica L. About 15 specimens all barren and stunted, some 50 yards east-south-east of the top of the Sneug (c. 1350 ft.), grows among moss and the roots of *Luzula silvatica*, August 2, Nr. 117.

Galium saxatile L. July 27, Nr. 24; Quivrigill, c. 150 ft., August 5, s.n.

Scabiosa succisa L. Grisigarth, July 29, Nr. 29.

Achillea millefolium L. Leiraback, and said to grow in the " Established Kirkyard," July 31, Nr. 86.

A. ptarmica L. Leiraback, c. 50 ft., July 30, Nr. 6.

Artemisia vulgaris L. Ham Voe, uncommon, probably introduced, July 30, Nr. 8.

Bellis perennis L. July 27, Nr. 51.

Cirsium lanceolatum Scop. On the north side of the Mill Loch and in the Manse garden where it grows to about 4 feet, August 5, s.n. The phyllaries and under surfaces of the leaves have an extra amount of woolly indumentum.

Leontodon autumnalis L. var. *pratensis* Koch. Above Harrier, July 25, Nr. 69.

Matricaria inodora L. var. *phaeocephala* Rupr. In the corn, July 30, Nr. 7.

M. maritima L. Gaada Stack, July 24, Nr. 37.

Senecio aquaticus Huds. var. *ornatus* Druce. Plentiful, July 30, Nr. 91.

S. vulgaris L. In the corn, July 30, Nr. 13.

Sonchus asper Hill. Uncommon, July 30, Nr. 46.

Taraxacum spectabile Dahlst. (?) Only seen on the south shore of Ham Voe, August 4, s.n.

Jasione montana L. Very plentiful in the low ground, July 24, Nr. 59.

Vaccinium myrtillus L. Scarce, does not fruit, July 31, Nr. 107.

Calluna vulgaris Hull. July 27, Nr. 54. Heather is said to have decreased and to flower less than formerly.

Erica tetralix L. Only seen in the Sukkimires and on Overfandal, c. 100 ft., August 4, s.n.

Armeria maritima Willd. July 26, Nr. 80. This is the narrow-leaved plant named *A. pubescens* Link = *Statice pubescens*.

Trientalis europaea L. Amongst heather on the top of a stone house at South Harrier, July 25, Nrs. 66, 67.

Menyanthes trifoliata L. In one spot in Ham Voe, August 2, Nr. 118.

Lycopsis arvensis L. A frequent weed in the beans, Ham, July 30, Nr. 18.

Myosotis arvensis Hill. July 25, Nr. 64; in the corn, July 29, Nr. 101.

Alectorolophus drummond-hayi Sterneck. August 4, s.n. (*Rhinanthus*).

Euphrasia borealis Wettst. August 4, s.n.

E. foulaensis Towns. Very common, July 25, Nr. 53.

Pedicularis silvatica L. Frequent on the exposed plateau, July 30, Nr. 85.

Pinguicula vulgaris L. July 25, Nr. 71.

Galeopsis tetrahit L. South Harrier, everywhere a weed in the corn, July 27, Nr. 63.

Lamium purpureum L. Leiraback, August 5, s.n.

Prunella vulgaris L. Very common, July 31, Nr. 89.

Thymus serpyllum L. (agg.). July 26, Nr. 73.

Littorella uniflora Asch. Sukkimires, August 4, s.n.

Plantago coronopus L. Plentiful round the sea coast, July 31, Nr. 90.

P. lanceolata L. Uncommon, August 2, Nr. 117.

P. major L. Common, August 5, s.n.

P. maritima L. July 26, Nr. 74.

Atriplex sp., probably one of the varieties of *A. glabriuscula* Edmondst. Gaada Stack, July 24, Nr. 100; on the sand, July 30, Nr. 100a. The specimens are too young for certain determination.

Polygonum aviculare L. (agg.). A frequent weed, July 30, Nr. 2.

Rumex acetosa L. July 27, Nr. 38.

R. acetosella L. Common in the low ground, July 24, Nrs. 60, 62.

R. crispus L. July 27, Nr. 48. The islanders, when they have no more potatoes to give to their hens, collect dock seeds for them.

R. longifolius DC. (?) "Established Kirkyard," July 29, Nr. 44; July 30, Nr. 99. The specimens are too young to determine with certainty.

Urtica dioica L. Only seen on the site of Mrs Traill's house, which was blown down in a gale some ten years ago, July 30, Nr. 3.

Salix herbacea L. On the north side of the Sneug, c. 1360 ft., August 1 and 2, s.n.

S. repens L. August 4, s.n.; on sandy ground, c. 100 ft., between Grisigarth and Punds, August 4, s.n.

Empetrum nigrum L. July 31, Nr. 110. This now grows all over the island and bears numerous berries. The islanders say that it has descended to the low ground and that it has more berries than it used to have.

Orchis maculata L. (*O. ericetorum* Linton). Frequent, July 30, Nr. 103.

Iris pseudacorus L. In a few ponds, August 2, Nr. 118.

Narthecium ossifragum Huds. Uncommon, July 28, Nr. 43.

Scilla verna L. North end and on the Sneug, c. 1370 ft., inland, July 24, Nr. 57.

Juncus bufonius L. Plentiful, July 31, Nr. 97.

J. effusus L. (approaching *J. conglomeratus* L.). July 29, Nr. 30; common, August 4, s.n.

J. lampocarpus Ehrh. On moor ground, about 100 feet, July 30, Nr. 14, August 2, s.n.; galled by *Livia juncorum*.

J. squarrosus L. July 27, Nr. 48; very plentiful all over the island up to 1370 feet, July 24, Nr. 58.

Luzula campestris L. July 24, Nr. 61; plentiful, July 31, Nr. 109.

L. silvatica Gaud. var. *gracilis* Bucheuau. At the summit of the island, 1370 feet, August 2, s.n. This variety is also known from the Faeros and the Shetlands.

Sparganium angustifolium Michx. (*S. affine* Schnitzl). Sukkimires, August 4, s.n.

Potamogeton oblongus Viv. (*P. polygonifolius* auct.). In peaty streams, July 30, Nr. 96.

Triglochin palustris L. In one or two spots on the Ham Burn, July 30, Nr. 4.

Carex binervis Sm. July 27, Nr. 49. Another specimen, Nr. 39, collected on the same date, is probably this species but is too young for certain determination.

C. goodenorii Gay. July 30, Nr. 98. A sheet with two tall slender specimens, in the low ground, August 2, s.n., is probably to be placed under this species but the specimens are incomplete and the utricles narrow.

C. rigida Good. On the summit of the island, August 2, s.n.

Eriophorum angustifolium Roth. August 2, s.n.; Mucklegrind, August 1, Nr. 113.

E. vaginatum L. July 29, Nr. 41.

Eleocharis palustris Br. Mucklegrind and Mill Loch, August 1, Nr. 112.

Scirpus caespitosus L. Seldom flowering, August 2, s.n.

Agrostis canina L. var. ? On sandy ground, August 4, s.n. Dwarf plants attacked by the smut, *Tilletia decipiens* (Pers.) Körn. (determined by Miss E. M. Wakefield).

Agrostis stolonifera L. var. *prorepens* Koch. July 29, Nr. 93; Sloag, August 3, s.n.

Aira praecox L. July 30, Nr. 88.

Alopecurus geniculatus L. July 25, Nr. 72.

Anthoxanthum odoratum L. July 29, Nr. 25.

Avena strigosa Schreb., sub-sp. *orcadensis* Marquand. July 30, Nr. 34. The inhabitants of Foula have grown their own seed for a long time.

Deschampsia flexuosa Trin. August 2, s.n.

Festuca rubra L. (viviparous). At the summit of the island, two sheets, s.n.

Glyceria fluitans Br. Bankwell and Sloag, not uncommon, July 30, Nr. 84.

Holcus lanatus L. Frequent in the low ground, August 4, s.n.; July 27, Nr. 40.

Hordeum vulgare L. (*H. tetrastichum* Körnicke). July 30, grown as a crop, Nr. 32.

Lolium perenne L. July 30, Nr. 31. About 1860 the inhabitants threw out some packing straw and there was a little of this in it. There was quite a patch of this which increased till recently since when it has decreased.

Molinia caerulea Moench. July 31, Nr. 106.

Nardus stricta L. July 29, Nr. 28.

Phalaris arundinacea L. Near the "Established Kirk," July 29, Nr. 35; south end of the Burn, August 1, s.n.

Poa trivialis L. July 30, Nr. 33.

Equisetum limosum L. July 25, Nr. 82.

E. silvaticum L. July 25, Nr. 68.

Blechnum spicant With. Common, July 27, Nr. 95.

Dryopteris aristata Druce. July 28, Nr. 77. Young plants from Ham Burn, July 30, Nr. 5, and July 26, Nr. 76, may be this species.

Eupteris aquilina Newm. Growing at c. 200 feet at Quivrigill in the centre of the island, s.n. Thomas Isbister, in Leiraback, says there used to be a line of bracken along the bottom of Hamnafield (100-200 feet) on the driest and most stony ground in the island. Quite recently an exceptionally hard winter is said to have killed it all off. All the surviving plants are small and hairy, like the specimens collected.

Botrychium lunaria Sw. In one spot on a sandy bank, c. 50 feet, Ham Voe, Nr. 21.

Selaginella selaginoides Link. Grisigarth, south end, July 29, Nr. 19.

LIST OF VERNACULAR NAMES GIVEN IN FOULA TO CERTAIN PLANTS.

These names were communicated to Gladstone by Robina Isbister. Some of the names are only those given by children.

Ranunculus acer L. Cra' Tae (=Crow's Toe).

Caltha palustris L. Block Flower.

Cardamine pratensis L. Peppermint.

Brassica sp. Runjie.

Cochlearia officinalis L. Arvie. The inhabitants say that the ground is light when this is found in the corn.

Silene maritima L. Anchor Keg.

Lychnis (? *L. dioica* L.). Sweet William.

Stellaria media L. Meldie. The inhabitants say that the ground is heavy when this grows in the corn, but as it is often accompanied by *Cochlearia officinalis* they must be wrong in one of their statements.

Spiraea ulmaria L. Queen-of-the-meadows.

Potentilla anserina L. Murrock. Children used to eat the long root.

P. erecta Hampe. The Bark. It was once used for tanning and also for a tonic.

Heracleum sphondylium L. (?) Spoottrie Drum. Said to be poisonous. Not represented in the collection. Can *Angelica silvestris* be intended?

Matricaria inodora L. Cock-a-lory.

Achillea ptarmica L. Camomile.

A. millefolium L. Heath Fever Grass. Used as a medicine by the islanders.

Artemisia vulgaris L. Bul Mint.

Senecio aquaticus L. var. *ornatus* Druce. Gowan.

Pedicularis silvatica L. Bee Suck. "Because if one sucks it one gets honey."

Alectorolophus drummond-hayi Sterneck (?) *Rhinanthus*. Monkey Flower.

Plantago lanceolata L. John's Mas.

Rumex acetosella L. Sourock.

Rumex spp. Docken. The inhabitants feed fowls and ducks on the "seeds."

Empetrum nigrum L. Heather Berry.

Orchis maculata L. Muldourie.

Iris pseudacorus L. Segs.

Scilla verna L. Swine's Husk. The pigs used to dig up "the root" and "imbibe its clammy juice."

Juncus lampocarpus Ehrh. Floss.

J. effusus L. Bora.

ANALYSIS OF THE FLORA.

I. Native, original vegetation.

(a) Aquatic and marsh species—*Caltha palustris, Ranunculus flammula, Cardamine pratensis, Lychnis flos-cuculi, Stellaria uliginosa, Montia fontana, Potentilla palustris, Spiraea ulmaria, Callitriche stagnalis, Epilobium palustre, Angelica silvestris, Hydrocotyle vulgaris, Senecio aquaticus* var. *ornatus, Menyanthes trifoliata, Pinguicula vulgaris, Litorella uniflora, Iris pseudacorus, Juncus bufonius, Sparganium angustifolium, Potamogeton oblongus, Triglochin palustre, Eleocharis palustris, Alopecurus geniculatus, Glyceria fluitans, Phalaris arundinacea, Equisetum limosum.*

(b) Species of sea-cliffs, rocks, and sea-strand—*Cochlearia officinalis, Sagina maritima, Lotus corniculatus* f. *grandiflora, Matricaria maritima, Armeria maritima, Plantago coronopus, P. maritima, Atriplex* sp.

(c) Arctic-alpine species—(*Cerastium vulgatum* var. *alpinum*), *Sedum roseum, Cornus suecica, Salix herbacea, Carex rigida.*

(d) Heath-moor species—*Ranunculus acris, Viola Riviniana, Polygala vulgaris, Cerastium tetrandrum, Sagina procumbens, Radiola linoides, Potentilla erecta, Drosera rotundifolia, Galium saxatile, Scabiosa succisa, Achillea ptarmica, Taraxacum spectabile, Jasione montana, Vaccinium myrtillus, Calluna vulgaris, Erica tetralix, Trientalis europaea, Alectorolophus* (*Rhinanthus*) *drummond-hayi, Euphrasia borealis, E. foulaensis, Pedicularis silvatica, Thymus serpyllum, Rumex aectosella, Salix repens, Empetrum nigrum, Orchis maculata, Narthecium ossifragum, Scilla verna, Juncus effusus, J. lampocarpus, J. squarrosus, Luzula campestris, Carex binervis, C. goodenarii, Eriophorum angustifolium, E. vaginatum, Scirpus caespitosus, Agrostis canina, A. stolonifera* var. *prorepens, Aira paecox, Deschampsia flexuosa, Festuca rubra, Molinia caerulea, Nardus stricta, Blechnum spicant, Dryopteris aristata, Eupteris aquilina, Botrychium lunaria, Selaginella selaginoides.*

(e) Relicts of woodland ground flora?—*Vicia cracca, Luzula silvatica* var. *gracilis, Equisetum silvaticum.*

II. Modified vegetation.

Cerastium tetrandrum, Sagina procumbens, Trifolium repens, Achillea millefolium, Bellis perennis, Leontodon autumnalis var. *pratensis, Prunella vulgaris, Plantago lanceolata, P. major, Rumex acetosa, Anthoxanthum odoratum, Holcus lanatus, Lolium perenne, Poa trivialis.*

III. Introduced plants.

(a) Weeds of cultivated ground—*Raphanus raphanistrum* var. *flavum*, *Lychnis dioica*, *Spergula sativa*, *Stellaria media*, *Vicia sepium*, *Matricaria inodora* var. *phaeocephala*, *Senecio vulgaris*, *Lycopsis arvensis*, *Myosotis arvensis*, *Galeopsis tetrahit*, *Lamium purpureum*, *Polygonum aviculare*.

(b) Ruderals—*Lychnis alba*, *Potentilla anserina*, *Artemisia vulgaris*, *Cirsium lanceolatum*, *Sonchus asper*, *Rumex crispus*, *R. longifolius*, *Urtica dioica*.

(c) Cultivated plants or ones escaped from cultivation—*Brassica oleracea*, *Trifolium pratense*, *Avena strigosa* sub-sp. *orcadensis*, *Hordeum vulgare*.

The following comments may be made on these groups of species:—

1. The aquatic and marsh species number 26. Several of those included in the heath-moor category might also be listed here, and, conversely, there are a few listed here which extend beyond the areas where the fresh-water table is at or above the soil surface. The aquatic flora is relatively rich—decidedly richer, for example, than that of St Kilda. The species are all widely distributed and are probably on the whole, an old element in the flora. The most interesting plant is Druce's var. *ornatus* of *Senecio aquaticus*. This seems a very distinct variety worthy of detailed study and cultural experiments.

2. The plants particularly characteristic of sea-cliffs, rocks, and sea-strand are not so numerous as might be expected, but this may be due to insufficient collecting in these habitats. All the species are of wide distribution, but attention may be called to the large flowered *Lotus corniculatus* f. *grandiflora* and *Armeria maritima* (sensu *A. pubescens*) as plants which need more detailed study by field and cultural methods than they have hitherto received.

3. The arctic-alpine element as here understood is limited to about four species. All of these species have a very wide circumpolar distribution and extend, on high mountains, far to the south in one or more of the continents. They are just sufficient to indicate the northern latitude of Foula (60 deg. 8 min. N.) and the influence of the last Ice Age. Most of the species are rare and seem to be dying out.

4. The dominant element in the flora is that placed here in the heath-moor category. This category was fairly fully discussed by the present writer when dealing with the flora of St Kilda, *Report Bot. Soc. and Exchange Club* for 1927, p. 441 (1928), and much that is stated there applies also to Foula. From the latter island 49 species are counted as heath-moor types. Fortunately more geological data are available for Foula than were known for St Kilda when the above account was written. These are summarised below and a full discussion of the origin of the dominant flora and vegetation is reserved for a later paragraph.

Attention may be called to *Alectorolophus drummond-hayi* and *Euphrasia foulaensis* as being the most interesting of the heath-moor species. The former is recorded by Sterneck [*Monogr. der Gattung Alec-*

torolophus in Abhl. K.K. Zool.-Botan. Ges. Wien I. ii., 115 (1901)] from Forfar: Clova; West Ross: Kinlochewe. Druce adds other Shetland localities (*Report Bot. Soc. and Exch. Club*, vi. 512, vii. 648) and it is also known from St Kilda. The latter is recorded by Wettstein [*Monogr. der Gattung Euphrasia* 140, 299 (1896)] from Shetland Inseln: Hammerfeld, Foula; Burrafiord, Unst; Vord Hill, Unst; Ollaberry, Northmavin. ? Gotland: Faro. Far-Oer-Inseln. Ostero-Kodlew bei Eide, 200 m.s.m. Druce (*Report Bot. Soc. and Exch. Club* vi., 509) adds numerous localities from the Shetlands and records a dwarf forma *nana* from the Orkneys.

5. Three plants are listed as possible relicts of former woodlands. It is, however, very doubtful if they are such.

6. Under the heading "modified vegetation," 14 species are included. It seems probable that some, and perhaps most of these have been introduced by man. Certainly their invasion of the heath-moor vegetation is encouraged by the activities of man and his domesticated animals.

7. The weeds of cultivated ground (12 species), the ruderals (8 species), and the cultivated plants (4 species) recorded, have been, with very few exceptions, introduced by man. The majority are strictly limited to the cultivated or inhabited areas.

Physiography and Geology.

The following details are taken from a paper by Dr T. M. Finlay, *The Old Red Sandstone of Shetland*. Part I. *South-Eastern Area*, published in *Trans. Roy. Soc. Edinburgh* liv., Part iii. (No. 12), 564 (1926). Viewed from the mainland, the island presents three steep escarpments facing the north; the most northerly, Soberlie Hill is 720 feet; the most southerly, the Noup, is less imposing; while between these rises the Sneug, 1373 feet high, the highest point of the island. Facing the south are dip slopes at gentle inclination. The general contour of the island suggests that it has escaped the extreme glaciation to which the islands to the east have been subjected. That the main ice-sheet did reach the island without completely over-riding it is clear from the fact that glacial deposits do occur sporadically on the lower ground. The underlying sandstones are smoothed and striated, the striae running in a north-west direction. On the higher ground no erratics are found; the deposits underlying the peat are thin clays, with a few fragments of the local sandstones. The hollow of Overfandal is a fine example of a corrie lake.

The rocks of Foula consist mainly of Old Red Sandstone, faulted down against the small area of metamorphic rocks which forms the north-east portion of the island. The fault is well seen at its extremities at Wurr Wick and Shoabill, and also where it crosses the small stream which enters the sea at Ham. For a very short distance from the fault the sandstones are steeply inclined and considerably shattered.

The metamorphic rocks against which the sandstones are thrown consist mainly of garnetiferous mica schists associated with bands of schist without garnets, biotite epidote schists, and biotite gneiss, with lenticles of biotite schist and veins of epidotic amphibolite. Intruded into the whole is a mass of pink granite forming Ruscar Head. It is a fine-grained granite, consisting essentially of quartz and orthoclase. It has been subjected to considerable crushing and granulitisation since its injection.

The sandstones have a very uniform dip of about 20° in a general southerly direction. On the north and south of the island they form low, steep cliffs, but on the west side they rise almost perpendicularly from the water's edge to form the magnificent mural precipice culminating in the Kame. The sandstones are vari-coloured in shades of grey, yellow, and red. They vary in texture from rather coarse sandstones down to fine-grained, argillaceous types. No fossils (beyond the usual macerated plant-fragments) have ever been found in them. They can only provisionally be placed in the Lerwick sandstone group. Some beds are rather calcareous, but the ferruginous types form the bulk of the sandstones.

LIFE-FORMS OF THE FOULA FLORA.

The following table gives the actual numbers of species falling into those categories of Raunkiaer's system which are represented in Foula.

Aquatic and marsh—H/14, G/1, HH/12, Th/2.
Sea cliffs—H/5, Th/3.
Heath-moor—N/1, Ch/11, H/27, G/8, Th/6.
Arctic-alpine—N/1, Ch/1, H/3.
Woodland relicts ?—H/2, G/1.
Modified vegetation—Ch/1, H/12, Th/1.
Weeds—H/3, Th/10.
Ruderals—H/6, Th/2.
Cultivated plants—H/2, Th/2.

The total vegetation has the following composition:—N/2, Ch/13, H/74, G/10, HH/12, Th/26. This gives the following biological spectrum, the number in each category being calculated as a percentage of the whole flora:—N/1.4, Ch/9.5, H/54, G/7.3, HH/8.8, Th/19.

The predominant element is hemicryptophytic (H). A majority of the therophytes (Th) are weeds, ruderals, or cultivated plants all of which are presumed to have been introduced by man. Excluding these the chamephytes (Ch) form the second most numerous group—a not unexpected fact considering the latitude of Foula.

GENERAL CONSTITUTION AND HISTORY OF THE FLORA.

There is no doubt that the flora of Foula is merely a detached portion of the flora of northern and western Scotland. The heath-moor element, which is dominant, consists, with only 2 or 3 exceptions, of species of very wide distribution and of hardy constitution. There is some evidence that certain species (notably *Empetrum nigrum*) have extended in the lower land during the past century, while others have been reduced in vigour and in distributional area (notably *Eupteris aquilina*). How far these changes may be due to subtle climatic changes and how far to changes in the activities of the inhabitants I cannot say.

That the island was at one time wooded over parts of its area seems certain from Lewis's investigations and Gladstone's references in letters to me of birch and juniper wood having been found in the peat. At the beginning of this century the laird, Prof. Ian B. Stoughton Holbourn, planted trees on the island in little groups, some on every croft. They were protected for some ten years by a wall and seem to have done uniformly well. They grew up to the level of the dyke surrounding them but found it impossible to grow higher. In good summers they progressed but the winter winds stopped their progress and they grow at the level of the dyke. Those surviving in some numbers are sycamore, willows, and elder. There are also specimens alive of black birches, Scots pine, rowans, oak, alder, and apple. The following have disappeared: mountain pine, wych elm, hornbeam, sea buckthorn, and beech. There is no doubt that the limiting factor for tree growth in Foula at the present time is exposure to violent gales and wind storms.

So far as I am aware no examinations has been made of the pollen-grain content of the peat in Foula. G. Erdtman [*Studies in the Micro-palaeontology of Post-glacial Deposits in Northern Scotland and the Scotch Isles, with especial reference to the history of woodlands*, in *Journ. Linn. Soc. Bot.* xlvi., 449 (1924)] deals with the peat pollen of Shetland's mainland. The pollen frequency is low (P.F. 8.2). The dominance of birch-pollen, the presence of pine-pollen even in the oldest layers, the occurrence of pollen of alder, elm, oak, hazel, lime, willow in the lower layers; and the practical absence of tree pollen in the upper layers of the peat deposits are noteworthy points.

F. J. Lewis visited Foula in 1910 (?) and investigated the peat deposits of the island. Lewis's investigations in Scotland generally led him to conclude that " the later phases of the glacial epoch were separated by fairly lengthy genial inter-glacial periods " (*The history of the Scottish peat mosses and their relation to the Glacial Period* in *Scottish Geogr. Mag.*, May 1926, 251). The history of the vegetation over peat-covered areas in Scotland since the later stages of the glacial period can be generalised as follows:—

1. An arctic-alpine vegetation resting on the moraine laid down by the last ice sheet.
2. A forest of birch and hazel.
3. A layer of arctic-alpine plants occurring down to sea-level in Shetland.
4. A forest of pine, hazel and birch occurring up to 3200 feet above sea-level.
5. A layer of peat accumulated from the period of stage 4 to the present day, consisting entirely of moorland plants.

The details of this sequence vary with the geographical position and the altitude of the deposits investigated. For Foula, Lewis [*The Plant*

Remains in the Scottish Peat Mosses, Part IV. *The Scottish Highlands and Shetlands** in *Trans. Roy. Soc. Edin.* xlvii., 793 (1911)] notes that the highest hills appear to be free from glacial drift, but the lower ground is covered with boulder clay overlaid in some places by a considerable thickness (up to 7 feet) of sand and clay (without stones), which appears to be of freshwater origin. Peat covers all the lower part of the island, except where it has been cleared for fuel, and also occurs up to 1200 feet on Brustins and Tounafeld. Remains of birch trees occur in the peat in nearly all places where this is more than 8 feet in depth. A typical section of Foula peat (near Flick Lochs) is given as follows:—

1. Recent peat—*Sphagnum* spp., *Eriophorum vaginatum*, *Calluna vulgaris*.
2. *Juniperus communis*—A very distinct layer found in all the sections at Flick Lochs and Overfandal Lochs.
3. *Eriophorum vaginatum*—forming peat.
4. *Betula glutinosa* Fries—the remains of small bushes.
5. *Scirpus caespitosus?*—Peat much decomposed with a few nutlets of *Carex* sp.
6. *Empetrum nigrum*—*Potentilla tormentilla*, *Empetrum* seeds, *Calluna*, *Sphagnum* spp.
7. *Betula verrucosa*—Pieces of fairly well-grown trunks up to 11 inches in diameter, *Pyrus Aucuparia*.
8. *Salix* sp.—Small creeping willow with bark and buds resembling *Salix herbacea*, but no leaves found.
9. Structureless peat.
10. Fine sand and gravel.

The position of juniper in stratum 2 and birch in stratum 4 exactly corresponds to the two layers of the Upper Forest met with in the Scottish Highlands separated by *Sphagnum*, *Eriophorum* and *Scirpus* peat. Lewis believes that it is impossible that the well-grown trunks of birch found in exposed places at 700 feet could have grown there under meteorological conditions similar to those obtaining there at present. This is very probably true. At the same time one cannot help suggesting that man by using wood for fuel and introducing domestic animals, especially sheep, may have been a subsidiary cause in the disappearance of trees in Foula. The discovery of living *Betula pubescens* in Shetland last year by W. R. Price on an islet of a freshwater lake, in a situation naturally protected from sheep, is significant.

In considering the flora of St Kilda in this *Report* last year, it was postulated that the main mass of the heath-moor flora survived the Ice Age *in situ*. That the same is true for the heath-moor flora, and one might add the aquatic and marsh flora, of Foula seems even more likely.

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*Lewis records the following plants not collected by Gladstone, and not given in the enumeration above, as occurring on Foula: *Festuca ovina*, *Poa alpina* var. *vivipara*, *Loiseleuria procumbens*, *Polygonum viviparum*, *Arctostaphylos alpina* and *Viola palustris*.

Certainly the evidence from the peat beds proves that typical heath-moor species have been intermittently dominant for a very long time—indeed peat, as we know it in Scotland, cannot form without them. The most recent geological investigations also indicate that the whole of Foula was not covered by the Quaternary ice-sheet or ice-sheets and that the island escaped extreme glaciation. Taking into account the present composition of the flora, the sequence of plant remains found in the peat, and the geological evidence it seems probable that the history of the vegetation can be summarised as follows:—During the Ice Age heath-moor species survived in places free from ice, but the arctic-alpine element was relatively more important than it is now. Tree species, especially birch, came in from the south as conditions became more favourable, but local topographical changes, natural succession, and, perhaps, small meteorological changes caused alternations of treeless heath-moor and birch woods, as well as modifications of the former. The arctic-alpine element became reduced to mere vestiges. Finally the advent of man, the introduction of sheep, and, perhaps, increase of wind storms destroyed all traces of natural woodland.

The writer is indebted for assistance in preparing this paper to the following gentlemen: E. W. B. H. Milne-Redhead, C. H. Wright (determination of Vascular Cryptogams), H. W. Pugsley (determinations of Euphrasia species), W. N. Edwards (assistance in tracing the geological history), and T. M. Finlay (copy of his paper including an account of Foula). Prof. Ian B. Stoughton Holbourn very kindly sent some valuable criticisms, and explained that the more correct name for the island was Fugley. Above all, thanks are due to J. Gladstone for the collection on which this account is based and for the very valuable notes which accompanied it. The St Kilda and Foula collections have both been added to the Herbarium at Kew where the material from the British Isles is being rapidly increased.

Kew, March 1929.

BRIT. MUS. (N.H.)
BOTANY

C. G. TROWER

BRITISH BRAMBLES.

C. G. TROWER.

PREFACE.

At my request my dear friend, Miss Charlotte Georgiana Trower, who some time ago had given me her beautiful paintings of British Plants, was kind enough to allow me to have them reproduced, and she generously fell in with my wish that a copy should be given to each of the Members of our Society, in which for some years she had taken a most intelligent and real interest. The paintings of the Rubi have been photographed and blocks made, great care being taken to have these as perfect as possible. We have to thank Mr A. T. Manners of Rose & Co., Oxford, and Mr R. H. Corstorphine, of Arbroath, for personally seeing to this work. I am greatly indebted to Mr W. Watson for drawing up the terse and excellent descriptions, and for the trouble he has taken over the naming and nomenclature. The Rev. H. J. Riddelsdell has also given valuable advice as to the identifications. These differ in some cases from those formerly made by the Rev. W. Moyle Rogers, but one feels sure that the names now chosen are more in accordance with modern views. Although these plates are only a small proportion of the 160 species of British Rubi, yet they are representative, belonging as they do to the chief groups. It is hoped that they may stimulate others to take up the thorny subject, so as to bring our knowledge of the genus more closely to the continental standard. Should there be any balance left after payment of the cost of publication, my lamented friend agreed to have it expended on plates of new and interesting plants for our Reports from time to time. These will be stamped as " From the Trower Fund."

G. CLARIDGE DRUCE.

Oxford, April 1929.

MEMOIR.

Charlotte Georgiana Trower was born at Stansteadbury, Hertfordshire, in 1855, where she died in 1928. The house is a dignified old mansion, with a fine lawn separated only by a ha-ha fence from a spacious pasture, where grow large specimens of the Essex and English elms, making a typical country scene. Adjacent is a long wooded wilderness or pleasaunce, thickly covered in spring time with masses of snowdrops and blue and white anemones, which make a brave show. Until a recent storm there were some beautiful examples of the Cedar of Lebanon, but it is still well wooded, and, as a ground work, has many spoils of the chase brought in from various places, such as *Atropa*, the Hellebores, *Daphne Mezereum* and *Laureola*, Honesty, Martagon lilies, yellow Aconites, Columbines and Lungwort. The sisters had a wonderful power of making plants grow in very unaccustomed places. In a charming nook on the west of the House, through which a little stream wends its way, grew *Cucubalus*, *Ajuga pyramidalis* hybrid, *Lathyrus maritimus*, *Lythrum Hyssopifolia*, *Potentilla rupestris*, *Teucrium Botrys*, *Meum*, *Vicia Orobus*, and *Lychnis Preslii*, which Miss Trower added to the British Flora when she found it at Tantallon. There is an old stew-pond, now too shaded by elms to offer much aquatic vegetation, and westwards a green expanse of well-timbered parkland, and a romantic looking and as yet "unrestored" ivy-clad church. The house and gardens, surrounded with delightfully coloured old brick walls, which are in their rough unpointed beauty, command pleasant prospects of the lush meadow lands and leafy lanes of the valley of the Lea. Here she was born, her father being Captain Edward Spencer Trower and her mother one of the Guernsey Gosselins, a botanical family. After her father's death his son Spencer lived here for many years with his two sisters, Alice and Charlotte. The girls had artistic gifts, the elder being fond of landscape painting, Charlotte preferring flower painting and silk embroidery, of which dainty examples are extant. They were both fond of the chase, Charlotte hunting with the Puckeridge Pack. She was a good shot. The brother had a celebrated pedigree herd of Guernseys, which after his death was kept on with considerable success by the sisters. When Charlotte began painting British wild flowers her sister travelled far and wide to procure fresh plants, which I was privileged to see and to identify. Later on, as the paintings were so good, it seemed desirable to concentrate on some group such as the Brambles, Roses, or Water Buttercups. Eventually the Rubi were chosen. Miss Trower took two most excellent guides for her models. Ferdinand Bauer, that incomparable flower painter, who illustrated Sibthorp's "Flora Graeca," offered a style which could not be bettered, and having obtained Weihe & Nees' "Rubi Germanici" she adopted the size of plate and the technical details which make that work so valuable. The chief difficulty was the identification of specimens. It was found advisable to send the actual living plants to the Rev. W. Moyle Rogers, Miss Trower retaining a duplicate in order to replace the fallen petals or faded parts. Yet about one in four only did he pass as characteristic. One sometimes doubts whether any single specimen can have all the characteristics on it which he thought made it typical. The time needed for identification and to paint them was so long and the season for gathering them in good condition was so short that the result of several years' intense work only yielded about thirty plates. Enquiries had been made as to the cost of publishing such a work. To make it representative would have required 200 plates. This would have meant a probable cost of £3000. Even if bromide prints (black and white) were used the book would be very costly, so, when the death of Mr Rogers took place, the project was allowed to drop, and the 30 plates which were finished were given to me. Subsequently Miss Trower was induced to show them at the Royal Horticultural Exhibition at Vincent Square, where they deservedly obtained the Grenfell Silver-gilt medal. One might say that if she had gone on painting the various kinds of brambles that could be distinguished from each other, so meticulously accurate were her pictures that most of them might with certainty have been identified. But there were great chances that others would be among those " off type " plants which bewilder even experienced batalogists, and so practically much of the work would be lost labour. Then the Great War intervened. The paintings of other wild flowers had been going on even more rapidly, with the rival Rubi discomfited, and their beauty and accuracy won warm commendation. She did her work very early in the morning, and many a flagging specimen, which looked too bad to paint overnight, after a doze of whisky and seclusion in a dark room, freshened up to be immortalised. Later on some of these paintings of Wild Flowers were also shown at the Royal Horticultural Exhibition and were awarded the Grenfell Medal. Subsequently another was given for her representation of Carices. Whereas all the other paintings were from living specimens which had been gathered in their native home, a few of the rare sedges in this exhibit were from dried specimens in my herbarium. These paintings are contained in 35 volumes which she was kind enough to give me some time ago. It was hoped that she might have lived to see some of them appear in a book on Wild Flowers which was to be published by the Clarendon Press, as a companion volume to the very popular, cheap, and excellent work, Sandars' " British Birds." Some of the drawings for this purpose had been very successfully reproduced in colour, and these were among the last things she saw. It must be mentioned that although possessing artistic powers to a remarkable degree, the Misses Trower were by no means arm-chair people who lived a life of selfish isolation. Charlotte was President of the local V.A.D. and Red Cross. Owing to their foresight, the Ware Priory Hospital was kept in a high state of efficiency, and they helped to maintain it during the War. At the same time Charlotte did excellent honorary work under the Ministry of Pensions, and many a wounded or sick soldier gained health and encouragement in " the shelter " on their beautiful lawn. Hers was no indiscriminating kindness. She was acute in her perceptions, and foolish people of either sex she could not endure. Both she and her sister were great dog-lovers. Latterly two shepherd dogs were their inseparable companions, and it was to me one of the pathetic sights to see her watching their gambols in which she could no longer share.

Miss Charlotte Trower accompanied the Society on its excursions to Jersey, Snowdon, Weston-super-Mare, and Cardiff, where her personality and unselfishness endeared itself to all. Her dainty paintings were at once our pride—and our envy. She was indeed a marvellous woman—full of kindness, of *esprit*, and of fine artistic instincts, yet she could give a Roland for an Oliver if occasion needed, and could bowl over a rabbit at a pretty long range—her war was waged against them as much for the sake of the flowers in the wilderness as for more mundane purposes, albeit the poorer neighbours benefited from the spoils of the chase. A few years since symptoms of a dire disease asserted themselves, and despite two severe operations the disease was not extirpated. One did hope that she might have been spared suffering and to have lived long enough to see her work reproduced. Alas! the change to Cromer was not beneficial, and one had to recognise that she was doomed. The enemy at the gate was remorseless, and in the sad conditions of suffering bravely borne, it was well that the Gate of Life should not be long barred. As one stood by the open grave, after a simple service, planned by her sister who knew what was most in harmony with her wishes, she was laid to rest in the graveyard of the old Church, surrounded by a large concourse of sorrowing friends of all sorts and conditions. Then one realised in all its stern severity the sharp severance from one of the most unworldly spirits that had ever moved amongst us.

LIST OF MISS TROWER'S PAINTINGS OF BRAMBLES.

The numbering is that of Druce's "British Plant List," the genus number of which is 185. The collector's name is given, with county and date where possible.

2. R. nessensis W. Hall. (suberectus And.). Easneye Wood, Herts, June 2, 1913, C. G. Trower.

3. R. fissus Lindley. Byfleet, Surrey, June 1913, Lady Davy.

25. R. cardiophyllus L. & M. (rhamnifolius, sub-sp. cardiophyllus L. & M.). Chobham Common, Surrey, August 1913, Rev. W. Moyle Rogers. (2 plates).

29. R. polyanthemus Lindeb. (pulcherrimus Neum.). Epping Forest, Essex, July 1914, C. G. Trower. (2 plates).

37. R. Selmeri Lindeb. Bournemouth, S. Hants, Rev. W. Moyle Rogers. (2 plates). Sligachan, Skye, August 1912, C. G. Trower.

40. R. rhombifolius Weihe. Tilford, Surrey, August 12, 1912, C. G. Trower.

47. R. ulmifolius Schott. (rusticanus Merc., p.p.). Stansteadbury Wood, Herts, July 17, 1912, C. G. Trower.

62. R. Subinermoides Druce. (subinermis Rogers, non M. & L.). Fittleworth, Sussex, July 10, 1914, Rev. W. Moyle Rogers. (2 plates).

67. R. vestitus Wh. & N. (leucostachys Schleicher). Stansteadbury Wood, Herts, July 1912, C. G. Trower. Knoydart, Inverness, August 1912, C. G. Trower.

90b. R. Radula Weihe, var. Echinatoides (Rogers). Beenham Lodge, Berks, July 1913, Alice Trower. (2 plates).

92. R. discerptus P. J. Muell. (echinatus auct. brit.). Ware Park, Herts, July 1912, C. G. Trower.

113. R. monachus G. Jensen. (glareosus Rogers & Marshall). Tilford, Surrey, August 1912, C. G. Trower.

120. R. foliosus Wh. & N., var. saltuum (Focke). Parndon Wood, Essex, July 1912, C. G. Trower.

122. R. rosaceus Wh. & N. Fittleworth, Sussex, July 1914, Rev. W. Moyle Rogers. (2 plates, second unlocalised).

BRIT. MUS. (N.H.)

C. G. TROWER LEADING HER HORSE.

This photograph is taken outside the Park close to the Churchyard where she is buried.

125. R. RUFESCENS L. & M. (ROSACEUS sub-sp. INFECUNDUS Rogers). Near Broxbourne Spinney, Herts, August 1913, C. G. TROWER.

130. R. DASYPHYLLUS Rogers. Chandler's Ford, S. Hants, July 1913, G. C. DRUCE.

149f. R. DUMETORUM Wh. & N., var. TUBERCULATUS Bab. Near Briggens Wood, Stansteadbury, Herts, June 1913, C. G. TROWER.

151b. R. CORYLIFOLIUS Sm., var. SUBLUSTRIS (Lees). Long Cross Wood, Stansteadbury, Herts, July 1913, C. G. TROWER. (2 plates).

151e. R. CORYLIFOLIUS Sm., var. CONJUNGENS Bab. (CYCLOPHYLLUS auct. non Lindeb.). Caistor, Norfolk, July 1913, C. G. TROWER. (2 plates).

152. R. BALFOURIANUS Blox. Tiptree Common, Essex, June 1913, C. G. TROWER.

153. R. CAESIUS L. The Grove, Stansteadbury, Herts, 1912, C. G. TROWER. (2 plates). Old River, Herts, July 1912, C. G. TROWER.

155. R. CHAMAEMORUS L. Huddersfield, Yorks, June 1912, ALICE TROWER.

R. NESSENSIS W. Hall.

R. SUBERECTUS And.

No. 2.

The stem is tall but is bent down by the weight of its branches; in the open it becomes rather glaucous. Focke likens the young growths to elder suckers. The prickles are few and small, and are deep purple-violet on a green background. The leaves are large and thin and of a shining, fresh, bright green; ultimately they are naked, as Hall says. The plate shows the flowering branches in their natural horizontal position. The flowers are large and the petals usually glabrous. The stamens are much longer than the styles in the newly opened flower. This comes into flower about the 26th May.

It is spread over central and north central Europe, chiefly in wet situations in woods. I have seen examples (1) with double flowers, (2) with furrowed petioles, and (3) with subulate yellow prickles. Other variations are said to occur in the direction of sub-sp. *fissus*.

Easneye Wood, Herts, June 2, 1913, C. G. TROWER.

R. FISSUS Lindley.

No. 3.

The stem is rather tall in the shade, low and oblique in the open: not glaucous. The prickles are very slender indeed, yellow or deep red, falcate, and stand close together all round the stem. The leaf-stalks are deeply channelled. The leaves are dull yellowish, thick and plicate, hairy above, greyish and softly hairy beneath. The leaflets overlap, and the terminal leaflets on the flowering branch are doubly dentate. Usually the flowers are much smaller than in *R. nessensis* type. The stamens are of the same length as the styles, and the filaments become pale lavender after the petals fall. Flowering begins about the 29th May.

Sub-sp. *fissus*, as I consider its grade to be, is found on peaty commons and on moors in northern Europe from Britain and the Belgian Ardennes eastwards. It is not found in France.

I have seen sub-sp. *fissus* often with double flowers. The plate illustrates an example with large flowers and with the stem prickles of *R. nessensis* type, but two longer prickles, rather broad-based, are shown on the old stem bearing flowering branches. Such broad-based prickles have been noticed by other observers, and, in some other respects, *fissus* varies towards the type.

R. nessensis and *fissus* and the other Suberecti often grow together. Thus, *R. nessensis*, *fissus* and *plicatus* at Chislehurst, Kent; *R. nessensis* and *sulcatus* at Bigberry, Kent; *R. nessensis* and *Rogersii* at Hayes, Kent; *R. plicatus* and *affinis* at Putney, Surrey; and *R. plicatus* and *opacus* at Arbrook, Surrey. It has been suggested on this account that they have been produced on the spot by cross-fertilisation. I am inclined to think, however, that their frequent occurrence together is due to their belonging to one and the same element in our flora, and that they entered their present habitats together in the fairly universal pond-and-peat period, following the last glaciation, and are co-relicts there.

These close allies (*nessensis* and *fissus*) stand rather apart from the rest of the Suberecti. They have tiny or subulate prickles, septenate leaves and short flowering branches; and the fruit is dark red, with very small pips. Like the rest of the group, however, they are peat-lovers. The stem ends in the air and vegetative propagation is by suckers alone. The leaves are concolorous, the petioles furrowed, and the basal leaflets sessile. The panicle consists of a few, 1-2 flowered branches, but late panicles coming from near the base of the flowering branch or direct from the lower part of the previous year's stem are more compound. The pedicels leave the rachis at a very sharp angle and bear nearly erect hairs. The flowers are pure white (or tinged red externally in the bud), the styles green; the petals spread horizontally and become saddle-shaped; the stamens remain spread after the petals fall. The calyx is green with a white-felted margin. Flowering commences about the beginning of June, and the leaves are shed in autumn. Such are the general characters of Suberecti.

Byfleet, Surrey, June 1913, Lady DAVY.

R. CARDIOPHYLLUS L. & M.

R. RHAMNIFOLIUS sub-sp. CARDIOPHYLLUS (L. & M.).

No. 25.

A common hedge-top bramble. In the open, on commons, it forms a tall, much-branched, rounded bush. The stem is angled and furrowed, with a scattering of thin stellate down, small, simple and clustered hairs, and a tiny grey bloom. The prickles are large, broad and strong. The lower leaves are clad with soft yellowish hair and felt; the upper leaves on the stem and panicle are more or less white-felted beneath. The leaves on the flowering branch have a tendency to curl up at the edges.

The teeth are rather irregular, close and small. The terminal leaflet is not always so rounded and narrow cordate-based as the plate shows, but is broad and truncate across the base with hardly any notch. The leaf-point is short and abrupt. The end petiolule is one-half the length of the end leaflet (in type *R. rhamnifolius* it is the same length as the leaflet). The flowering branch is angled and glabrescent below, and bears medium prickles, declining or falcate (not hooked). Widely spreading 3-5-nate leaves under the panicle and exceeding the branches in their axils, are very characteristic. The panicle is nearly cylindrical, densely branched, the middle branches standing out horizontally; they and the upper branches deeply divided, some in pairs, and some of the pedicels also in pairs. Flowers white or pinkish, incurved, the petals truncate with a shallow sinus. Stamens longer than the yellow-green styles. Calyx segments short-pointed, spreading for a time after flowering, then reflexed. The young leaves in the spring are red. It begins to flower about the 23rd June. Flourishes on clay but is not confined to it.

This species (or sub-species of *rhamnifolius*) seems to be restricted to Great Britain, the north of France and Denmark.

Chobham Common, Surrey, July 1913, leaves August 1913, Rev. W. Moyle Rogers, as *rhamnifolius*.

R. POLYANTHEMUS Lindeb.

R. PULCHERRIMUS Neum.

No. 29.

Known readily by its finely denticulate-serrate leaves, plicate, becoming convex, and by the formal oval-obovate, cuspidate end leaflet, occasionally split down one side to form an additional leaflet. All the leaflets are relatively short-stalked. The whole plant is dull and greyish and softly clothed with hairs, the leaves more or less felted beneath as well. For the most part it remains a dull grey-green hue, but the prickles are red and the stem will turn dull red in an open situation. The flowering branch bears some quinate leaves, as well as simple and ternate, and these are all remarkable for their fine even dentition and prominent veins underneath. The panicle bears some stalked glands and acicles amongst the hair clothing the rachis and branches. The panicle is an elongated, mostly leafless pyramid of numerous smallish, pink flowers. The petals are broadly elliptical, with an abrupt short claw. The stamens are much longer than the yellowish-green (sometimes pink-based) styles. The fruit is freely produced, but for so fine and robust a bramble is somewhat disappointing, and not to compare, for instance, with its smaller ally, *R. Scheutzii*, for size.

This bramble is not found apparently in France or Belgium or Germany (except in Schleswig), but is confined to Britain (where it is more common than anywhere else), Denmark, Sweden, and Norway. It is bare of leaves in winter.

Epping Forest, Essex, July 1913, C. G. Trower.

R. SELMERI Lindeb.

No. 37.

Known by the strong curved prickles; the crooked axis of the inflorescence; the broad green bracts and bracteoles; the short stamens; the long-pointed, sometimes toothed, loosely reflexed calyx segments; the angled, sulcate stem; the deep green, plicate leaves; the coarsely toothed, roundish terminal leaflets; and the broad, equal (not pyramidal) inflorescence. The first flowers open about the 6th June. The fruits are large and oblong.

This species extends from S. England to Scotland and Ireland, and to S.W. Norway, Denmark and N.W. Germany; not reaching Belgium, France, nor the Channel Islands.

Plates 1 and 2, Bournemouth, S. Hants, Rev. W. Moyle Rogers; Plate 3, Sligachan, Skye, August 1912, C. G. Trower.

R. RHOMBIFOLIUS Weihe.

No. 40.

This is a climbing, woodland bramble. The stem has hollowed sides and sharp angles when young, but becomes obtuse-angled with convex sides when old. (Compare the two stem-pieces). The prickles are a bright red from the first, and are not numerous. The stem, when it emerges in spring, is wholly bright red. The five leaflets are shining yellow-green and plicate, narrow and gradually pointed; they are all of about the same size and make up a wide-spreading leaf; and the basal leaflets are distinctly stalked and centrally inserted. The thinly hairy panicle has also only a few prickles, but those strong and curved: and it has some very shortly stalked, quite inconspicuous glands. The end flower is only shortly stalked. The pedicels have erect hairs. The end leaflets of the ternate leaves on the flowering branch are pronouncedly wedge-shaped below (hence *rhombifolius*). The incurved petals, long stamens and styles are all alike a bright red; the anthers are slightly pilose. The fruit is large, well-flavoured and abundant.

For flowers and fruit and for its beautiful stems and foliage this is one of the most desirable brambles for the garden. It begins to flower about the 18th June. Abroad it is found from Denmark to Portugal, and from Portugal to Austria and Germany.

Tilford, Surrey, August 12, 1912, C. G. Trower.

R. ULMIFOLIUS Schott.

R. rusticanus Merc., p.p.

No. 47.

Our commonest bramble in South Britain and too well-known as a hedgerow bramble, especially on clay, to need description. Reference may, however, be made to the following points:—It is eglandular; densely, closely white-felted; stem glaucous, evergreen; leaflets small, glossy above, wrinkled, convex, leathery; panicle long, destitute of leaves; panicle prickles strong, hooked; stamens equal to the red styles; young carpels very pilose. The pollen is regularly formed, which fact. and its wide distribution from the Atlantic islands across southern Europe and into central Asia, suggest that it is a surviving Tertiary species. It extends to the Hebrides, just enters Denmark, does not cross the Rhine, and in eastern Europe does not get far north of the Mediterranean. Many hybrids are found which it has formed with other species.

The form represented in the plate is not altogether typical *R. ulmifolius* as it has pubescence on the midrib and nerves and on the petiole and petiolules. The underside of the leaf is also represented as slightly yellowish. It is perhaps *R. heteromorphus* Rip.

Stansteadbury Wood, Herts, July 17, 1912, C. G. Trower.

R. SUBINERMOIDES Druce.

R. subinermis Rogers, not of M. & L.

No. 62.

The stem is blunt-angled, grooved and glaucous, felted and somewhat hairy (both simple and clustered hairs occur). The stem-prickles are strong-based, short and curved, and there is an occasional short acicle and stalked gland. The leaves are grey beneath and become very convex.

The flowering branches, if not large, are almost without prickles, at any rate in their upper part; but if they are well developed they produce plenty of strong, nearly straight, deflexed prickles. The long inflorescence is dense at the top, and lax below; its branches are deeply divided or fascicled. The flowers are rather small and ill-favoured, the petals being narrow, whitish with a greenish claw, the stamens white, the styles green. They first unclose about the 12th June. The carpels are hairy.

This is a woodland bramble, becoming very strong and far-flung when growing in a moist soil rich in leaf mould. It has not been found on the Continent.

Fittleworth, Sussex, July 10, 1914, Rev. W. Moyle Rogers.

R. VESTITUS Wh. & N.

R. leucostachys Schleicher.

No. 67.

No. 16, from Stansteadbury Wood, Herts, is the form of open situations; No. 17, from Knoydart, Inverness, is the shade form. No. 17 is the bramble of which Bell-Salter says (*Phyt.* ii., 105-7) that when he first observed it he thought he had discovered a new species which he proposed in his mind to call *R. rotundifolius*, but he found on looking into herbaria that others had been struck by its remarkable appearance and had obtained the same impression of its distinctness. Borrer, however, disabused him, and he recognised that No. 16 was the variety of

R. vestitus of sunny exposures, and No. 17 the variety of shady woods. Smith, in the *English Flora*, vol. ii., p. 403 (1824), said that the species had been sometimes found by Borrer with heart-shaped leaflets—evidently No. 17. After this, Babington in his *Synopsis* (1846) went so far as to publish this shade form as a new species, *R. Leightonianus*, but was quickly corrected by Leighton in *Phyt*. iii., 176-8. It is fortunate, therefore, that we now have such excellent representations of the two forms.

The circular terminal leaflet is very characteristic of *R. vestitus*: it is plicate when young, very softly villous and white-felted beneath, but tinged yellowish (as indeed the whole plant is, and especially the calyx base) by the shining villi. The stem is blunt-angled and glaucous. There is a scanty assortment of glandular and prickle structures; the long and slender, nearly horizontal, prickles here and there on the wavy panicle rachis are also characteristic. The flower buds are large, owing to the exceptionally numerous and long stamens they contain. They open first about the 23rd June. The anthers are, at any rate some of them, slightly pilose. The calyx segments are short-pointed, like the leaflets, and are reflexed from the fruit. The styles are yellowish-green. The fruit is large and sweet and abundant.

This bramble delights in a clay soil or a chalk soil, and is consequently frequent on chalk downs. It is spread over most of west central Europe, but is missing from some large districts, *e.g.*, Anjou.

In the shade form, No. 17, the leaves are larger, greener beneath and flaccid; the stem is green and more cylindrical; the panicle is green and less prickly; and the flowers are smaller.

No. 16, Stansteadbury Wood, Herts, July 1912, C. G. Trower. No. 17, Knoydart, Inverness, August 1912, C. G. Trower.

R. RADULA Weihe, var. ECHINATOIDES Rogers.

No. 90b.

A beautiful woodland or heathland bramble, often associated with gorse. The stem, the panicle rachis and its branches are crimson, and the underside of the leaves greenish grey. The stem is glabrous, the end leaflets obovate (cuneate-based on the flowering branch). The principal teeth are sometimes bent outwards as in *R. echinatus* (hence the name). On the lower part of the flowering branch the leaves are very coarsely and deeply incised. There are ternate as well as quinate leaves, and often it is hard to find a quinate leaf at all.

The prickles are long and slender; some are straight, and some are falcate. In well developed examples the strongest prickles on the panicle rachis are bent to a vertical direction and their base runs down the rachis. The panicle is narrow and long, and bears a good many long acicles. The petals are nearly white, obovate, tapered to the base, and they stand well apart in the wide-open flower. The styles are greenish.

It comes into flower near the end of June. It is not known on the Continent.

Beenham Lodge, Berks, July 1913, Alice Trower.

R. DISCERPTUS P. J. Muell.

R. ECHINATUS auct. brit.

No. 92.

A strong bramble known by its exceedingly prickly, not glaucous, stem, grooved on the sides, villous, bearing short-stalked glands and short acicles of equal length, and by its elegantly cut leaves, especially the lobate, incised, simple leaves along the broad, cylindrical, villous panicle. The panicle branches are remote except towards the summit of the panicle where they are suddenly grouped closely together. The flowers are lilac, the petals oblong, shortly clawed, the stamens white, rather longer than the yellowish styles. The long-pointed calyx segments are reflexed after flowering. The fruit is large and oblong, and is abundantly produced.

It is difficult to decide whether our English bramble students before 1860 really knew this bramble and how to separate it from the other Radulae and the Koehleariani. From a study of Babington's *Synopsis of the British Rubi* (1846), Bell Salter's paper in *Phyt.* (1845), and Babington's explanations in *British Rubi* (1869), I am inclined to think that they did not, and that it will not therefore be permissible to retain the present name. The one adopted by Sudre, etc., must be selected, *i.e.*, *R. discerptus* P. J. Muell.

This bramble comes into flower about the 26th June, and is frequent on heaths and in hedges and old quarries.

Ware Park, Herts, July 1912, C. G. TROWER.

R. MONACHUS G. Jensen.

R. GLAREOSUS Rogers & Marshall.

No. 113.

This was collected in Surrey about forty years ago, and was known for a time by the manuscript name of *R. pallidiformis*. Rogers in his Essay (J. B. 1892) names it doubtfully as *R. mutabilis* Genev., whilst recognising that it also recalls *R. echinatus*. Later, in his *Handbook*, he writes his description of *R. mutabilis* from this Surrey bramble, and adds "*R. monachus* G. Jensen?" In 1912, unable any longer to identify it with *R. mutabilis* Genev., Rogers, with Marshall's help, describes it as a new species under the name of *R. glareosus*.

It recalls *R. rufescens* in general appearance, and in some other respects *R. foliosus* f. *saltuum*.

Distinct in its bluntly angled, hairy, glaucous stem, with mostly shortly stalked glands, and with strong, deflexed crowded prickles; its quaternate or incompletely quinate leaves, with some felt as well as hair beneath; the narrowly obovate, long-pointed terminal leaflet, deeply, rather doubly dentate; the narrow straggling panicle, with lax, patent, few-flowered branches, for the most part with large trifid bracts, but with one rather large ovate leaf at the base. The flowers have the same narrow, spaced, pale pink petals and red styles as *R. foliosus*, but differ in having longer stamens and longer calyx segments. The flower buds have a rounded base. The crowded stalked glands and acicles, although unequal, are mostly sunken in the dense hair of the panicle. The calyx segments turn back when the flowers open and return to a horizontal position after the petals have dropped. The young carpels are very pilose.

Found chiefly in Surrey and the adjoining counties, and in Schleswig, but with white flowers.

Tilford, Surrey, August 1, 1912, C. G. TROWER.

R. FOLIOSUS Wh. & N., var. SALTUUM (Focke).

No. 120.

A low-growing, shade-loving bramble, frequent in commons and in woods in the south of England. Known at once by the deep green, shining foliage, and especially the large, sometimes grotesquely large, roundish cordate leaf, the lowest perhaps of half-a-dozen simple leaves gradually diminishing in size and gradually whiter beneath up the very narrow, zigzag, drooping panicle. The upper panicle branches are half-erect; the lower branches are accompanied by a solitary, stalked flower at their base or by another branch. The flowers are rather small, the petals pink, the stamens short, the styles red. The white (inside) calyx segments are permanently reflexed after flowering.

This bramble was known to English botanists as long ago as the forties of last century and figures in the older floras and county floras under the name of *R. Guntheri*.

Its range extends from South Britain to Switzerland, N.W. Germany and Central Europe.

Parndon Wood, Essex, July 1912, C. G. TROWER.

R. ROSACEUS Wh. & N.

No. 122.

This is the true *R. rosaceus* of Weihe and Nees in *Rubi Germanici*. It is fairly frequent on the downs and the Tertiary heaths in W. Kent and E. Surrey. The stem bears broad-based deflexed prickles, and is dark fuscous-purple when old, slightly hairy, and a good deal grooved owing to the decurrent leaf-bases. Leaves 3-5-nate, not felted beneath and only thinly pubescent. Leaflets slightly overlapping. Terminal leaflet roundish cordate, long and gradually pointed, rather doubly dentate. Panicle often hanging, leafy nearly throughout, pyramidal, ending in a narrow pointed head of short, one-flowered patent branches; middle branches patent, about three-flowered; the lower branches long, many-flowered, slightly ascending or horizontal, and unusually numerous. None of the pedicels exceed one centimetre in length; the inflorescence therefore, besides being closely branched, is closely set with flowers. As Braeucker remarks, there are usually over one hundred flowers, and one-half of these are out at once. The panicle is villose below, the prickles are falcate or hooked, and the shorter glands are sunken; above, the prickles are straight and declining, or falcate, the panicle is quasi-felted, and even the shorter glands are conspicuous. The rachis is slightly flexuous and angled. The flowers are small and have often one or two extra petals and calyx segments. The petals are pinkish (not bright pink), elliptical or obovate, entire at the apex, and narrow. The stamens are erect, white, the outer ones turning red, slightly exceeding the yellowish-green (to red) styles. The thickly grey-felted prickly calyx segments end in long, leafy, slightly toothed tips, as on a rosebud (hence *R. rosaceus*); reflexed after flowering, they at length become patent or ascending. Their inner surface colours red. Young carpels glabrous. Fruit perfected, abundant, but ripening late. It begins to flower with us about the 28th June.

On the Continent it is confined apparently to the Rhine river-system.

Fittleworth, Sussex, July 1914, Rev. W. MOYLE ROGERS, as *durotrigum*. (2 plates, second unlocalised).

R. RUFESCENS L. & M.

R. ROSACEUS sub-sp. INFECUNDUS Rogers.

No. 125.

Known chiefly by its yellowish green leaves, thickly softly villose beneath, and by its lax, pyramidal inflorescence of large rosy flowers, which are succeeded by dry small fruits enveloped in the long, white-edged calyx segments. The panicle rachis bears long, exactly patent acicles, mixed with glandular bristles and unequal, mostly short-stalked glands and pricklets. The flower buds are unusually large and are remarkable for their flat discoid base (see the subterminal bud on the lowest branch on the left).

It comes into flower about the 10th June, and is a frequent and conspicuous feature of our woods on sand and gravel. It is found also in the north of France.

Spinney near Broxbourne, Herts, August 1913, C. G. TROWER.

R. DASYPHYLLUS Rogers.

No. 130.

A well distributed bramble in Britain, once supposed to be endemic, but recently found in Denmark. Stem sharply angled, very hairy, with many stout-based, spreading prickles and pricklets and an assortment of acicles and glandular structures. Leaves 3-4-5-nate, yellowish green, very softly villose beneath (hence the name), the principal teeth larger and repand. Terminal leaflet broad oval-obovate, cuspidate. On the flowering branch the leaves are large, ternate, and the terminal leaflet is often nearly round. Stipules inserted rather high, broadened in the middle. Panicle cylindrical, truncate or blunt, leafy to the top; the lower branches exceedingly distant, short and nearly erect. When in bud the panicle is striking for its greyish, yellowish-green appearance and its stout, very villose rachis. Flowers on densely aciculate pedicels, deep pink, usually rather small; stamens pink, much longer than the salmon styles. Calyx segments with a long, leafy tip, rising after the petals drop, later on sharply reflexed. Fruit oblong, when young a very pale green, from which it changes to a coral red before going black. It comes into flower about the 21st June.

It was formerly confused with *pallidus* Weihe.

Chandler's Ford, Hants, July 1913, G. C. DRUCE.

R. DUMETORUM Wh. & N., var. TUBERCULATUS Bab.

No. 149f.

The blunt-angled stem bears short hair and a fair number of short-stalked glands and short acicles, finer and less noticeable than in the Radulae. The prickles and pricklets are stout and numerous and rest on a swollen base (hence *tuberculatus*). The leaves are mostly incompletely quinate, and are wrinkled. The calyx bears quite short-stalked glands and short acicles; the calyx segments after flowering rise to a half-erect position (seldom erect), becoming eventually loosely (seldom completely) reflexed. The colour of the flowers is sometimes white, sometimes pinkish, sometimes pink; and the terminal leaflet is sometimes very broad across the base, so that the leaflet becomes deltoid. The fruit is nearly worthless as a rule, but occasionally a bush will be found producing good fruit.

It flowers from about the 24th May onwards, and is to be found in Great Britain and Ireland, but has not been reported on the Continent.

Near Briggens, Stansteadbury, Herts, June 1913, C. G. TROWER.

R. CORYLIFOLIUS Sm., var. SUBLUSTRIS (Lees).

No. 151b.

This and the next differ from *R. caesius* chiefly in having imperfect, not pruinose fruit, from which the calyx segments are turned back, and in having the leaves whitish and smoothly felted beneath. The three-lobed terminal leaflet with deeply cordate base, and the short, slender, deep purple prickles seated on the glaucous green and red stem are very striking. The leaves are waved on the margins. The panicle is inoffensively armed, is felted rather than hairy, and the lower long-peduncled branches are spaced out from each other.

It begins to flower about the 12th June, and is frequent on commons and in hedges and woods throughout Great Britain and Ireland, but has not been reported from abroad.

Long Cross Wood, Stansteadbury, Herts, July 1913, C. G. TROWER.

R. CORYLIFOLIUS Sm., var. CONJUNGENS Bab.

CYCLOPHYLLUS auct. non Lindeb.

No. 151c.

This has a more angled stem than the last, with stronger and longer prickles. The leaves are pentagonal in outline, and have all the leaflets considerably overlapping. The terminal leaflet is doubly dentate but not lobate, and is more shortly stalked with a short and cuspidate point. The panicle has a dense top. The calyx segments are cuspidate. The fruit is better developed than in the last. The styles are yellowish. In *R. cyclophyllus* Lindeb. (for which this has long been mistaken), the calyx segments are erect, the leaves are not discolorous beneath, the fruit is pruinose and the styles are reddish. Flowers at the same time as the last, in similar situations, and is equally common.

Caistor, Norfolk. C. G. TROWER.

R. BALFOURIANUS Blox.

No. 152.

The stem is long and trailing, branching freely, roundish or bluntly angled, conspicuously hairy, somewhat pruinose, with scattered short acicles and short and fine stalked glands. Prickles weak and patent. Leaves quinate, very large, thin and flexible, silkily felted underneath when just expanded, becoming nearly bare by the end of the season. Panicle large, loosely branched to form an irregular corymb; rachis somewhat zigzag; the terminal flower overtopped by those arising immediately below it; all the lateral pedicels long and slender. Flowers large and handsome, flat when fully open. Petals lilac, broad, ovate, overlapping; stamens pink, of about the same length as the reddish styles; anthers pilose. Calyx green and pilose. Fruit oblong, composed of rather large drupelets without bloom, embraced by the broad, long-pointed calyx segments. Stipules and bracts broad. The first flowers open about the 27th May, and it continues in flower until the end of autumn.

Not uncommon on ditchsides and in wet places in woods, especially on clay. Chiefly found in South Britain and in North West France.

Tiptree Common, Essex, June 1913. C. G. TROWER.

R. CAESIUS L.

The Dewberry.

No. 153.

The stem and flowering branches are slender, cylindrical and glaucous, and bear weak prickles, fine short acicles and short-stalked glands. The first flowers unclose about the 24th May. The stamens spread very much apart and give the flower an evenly dotted appearance. The pedicels are erect, a bunch of three usually terminating the inflorescence. The calyx segments are prolonged into linear points and they embrace the fruit. The fruit is composed of a few large drupelets covered with a grey bloom (hence *caesius* and Dewberry). It is not pleasant to eat until some time after turning black. It will eventually part more or less from the receptacle, like the raspberry does. The leaves, which are green and not felted beneath, fall in November.

The Dewberry is plentiful along ditches and hedges and in wet places, and will invade cultivated, and especially clayey and chalky ground. It is found all over Great Britain and Ireland and extends across central Europe into Asia.

Plates 1 and 2. The Grove, Stansteadbury, Herts, 1912, C. G. TROWER.
Plate 3. Old River, Herts, July 1912, C. G. TROWER.

R. CHAMAEMORUS L.

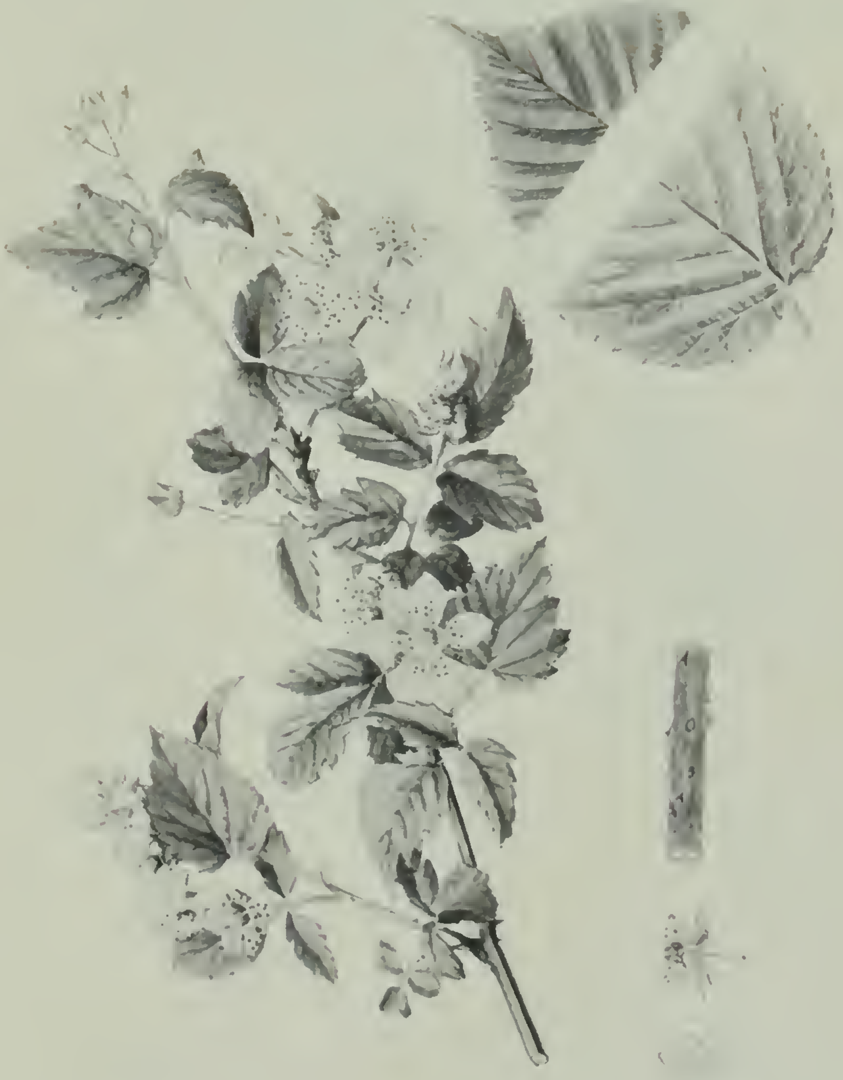
The Cloudberry.

No. 155.

The slender, woody rhizome creeps far and wide, sending up unbranched stems clad at the base with ochreate stipular scales, and bearing 1-4 currant-like leaves, but devoid of prickles, and ending in a single white flower. Usually in some of the flowers the styles are almost entirely suppressed, while in others the stamens are antherless. The petals are broad-based and scarcely clawed. The fruit is orange-coloured when ripe, enclasped by the calyx segments. The stem dies back to the rhizome and vegetative propagation is by means of stolons emitted from the rhizome.

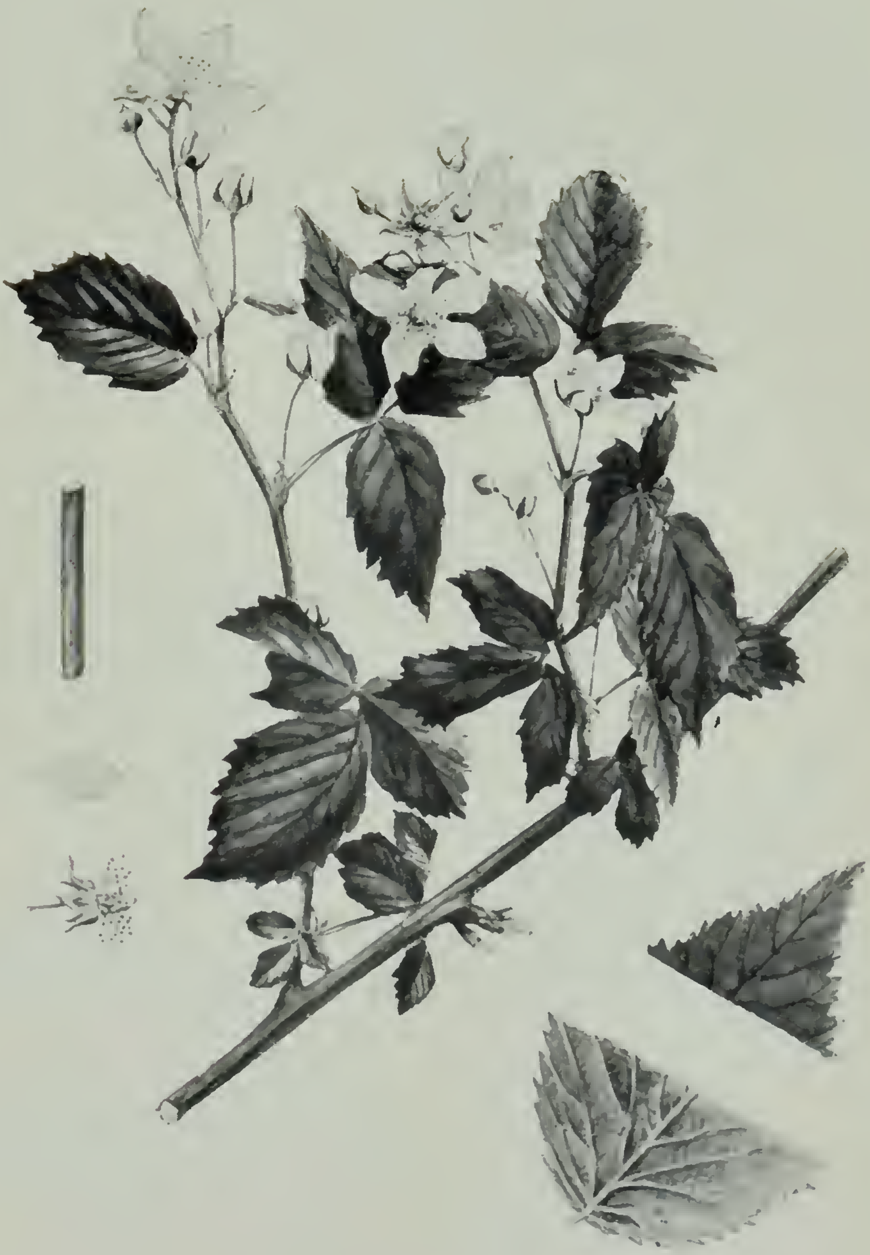
Frequent in swampy peaty places on the mountains. Very widely distributed.

Huddersfield, Yorks, June 1912, ALICE TROWER.



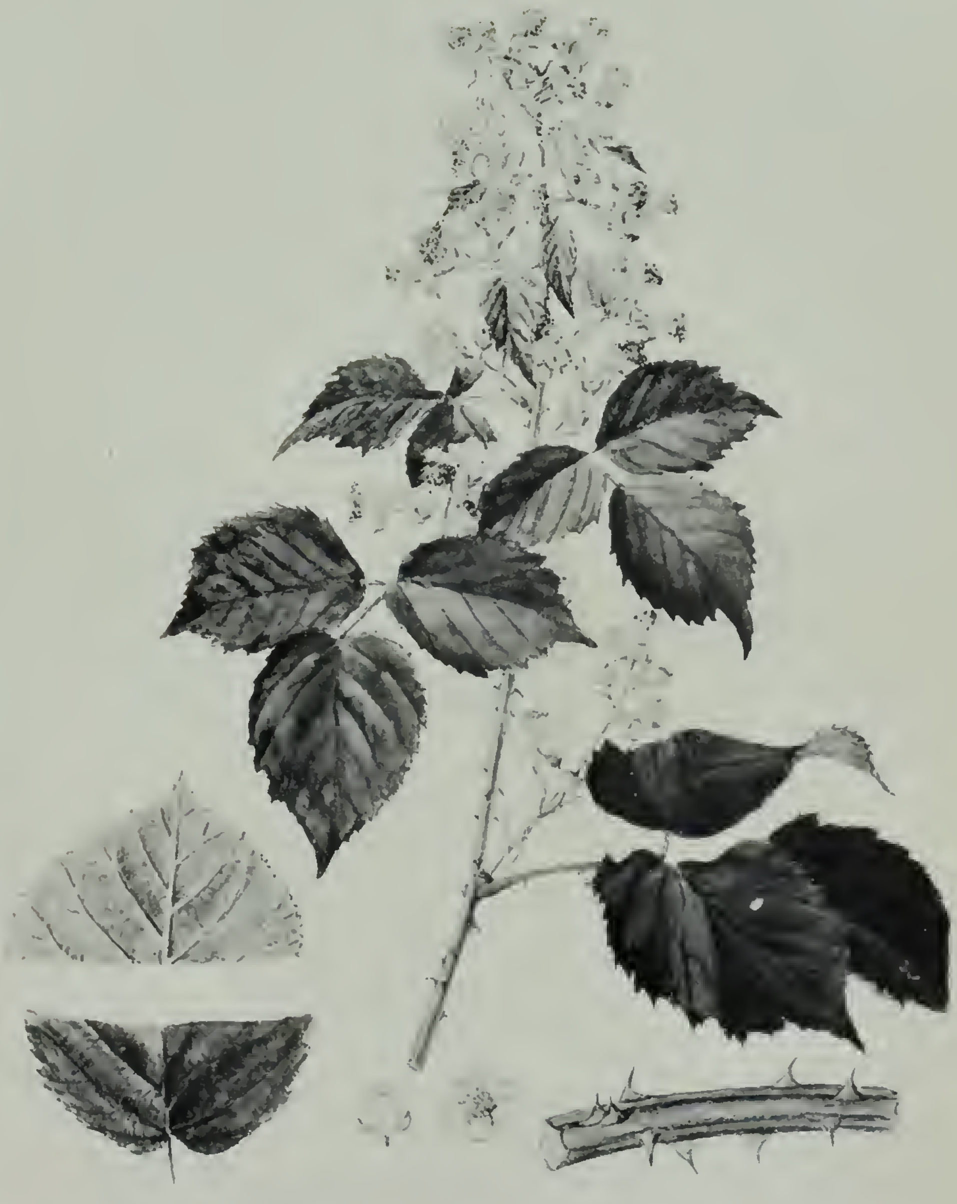
RUBUS FISSUS Lindley.

BRIT. MUS. (N.H.)
BOTANY



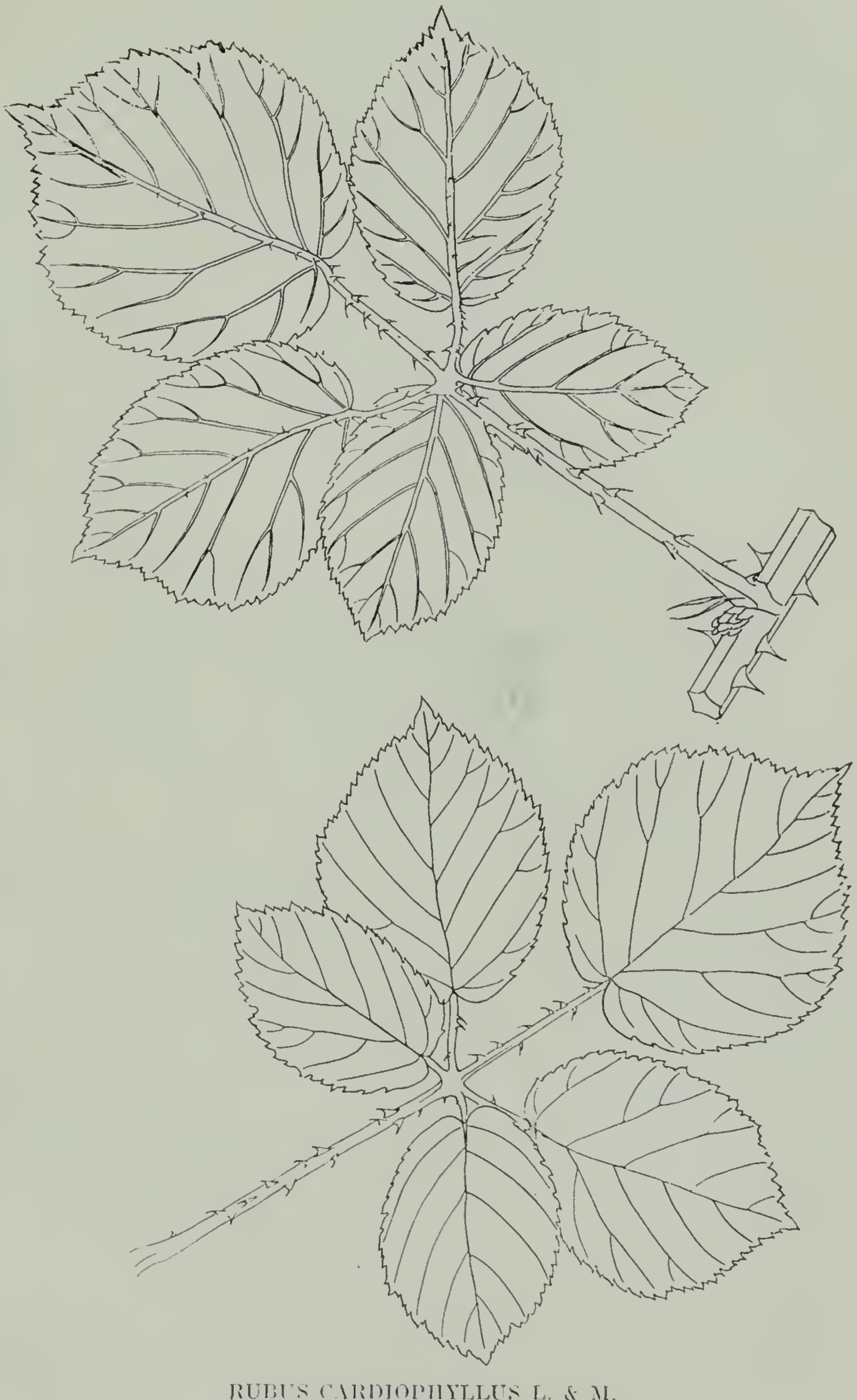
RUBUS NESSENSIS W. Hall.

BRIT. MUS. (N.H.)
BOTAN



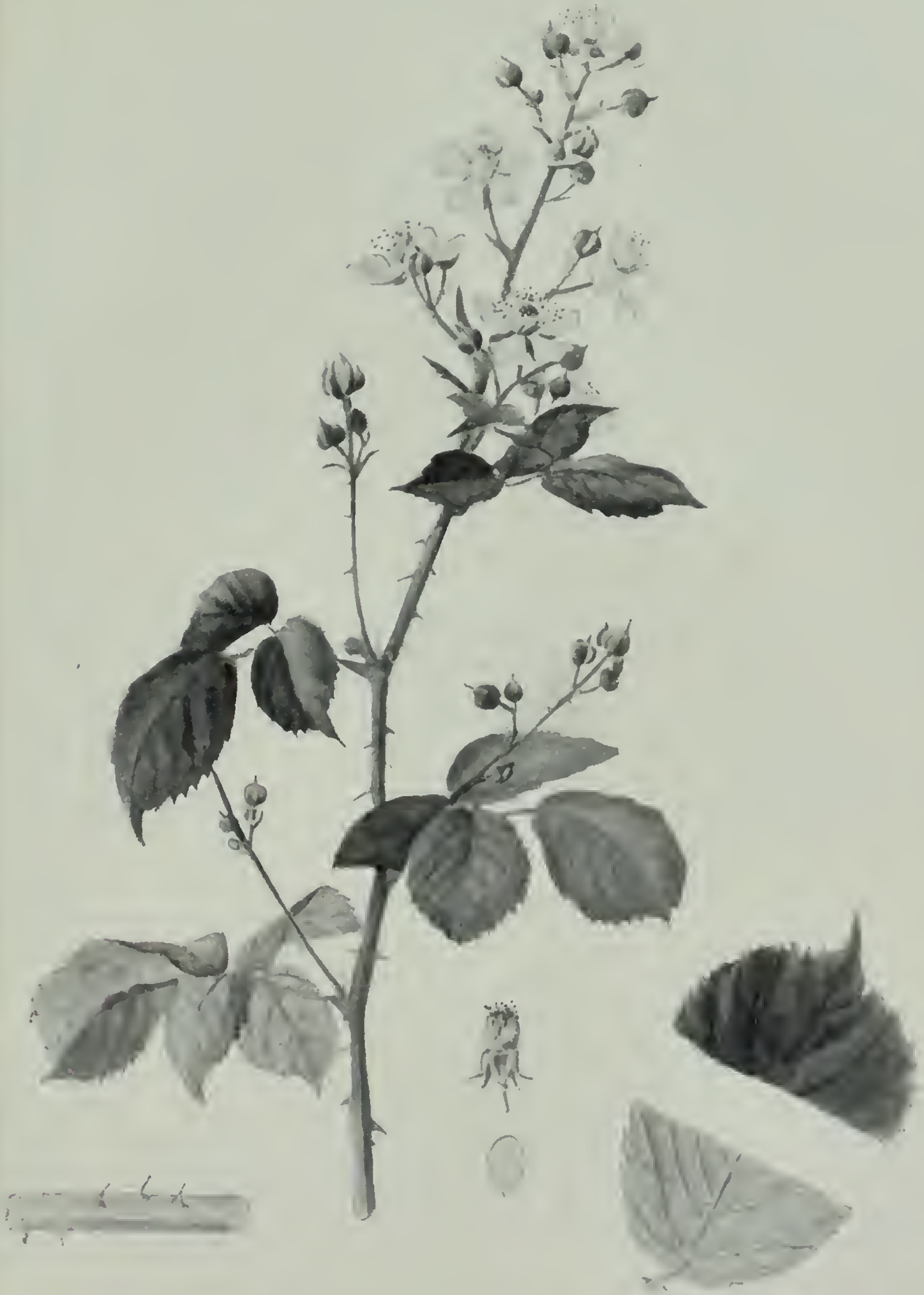
RUBUS CARDIOPHYLLUS L. & M.

BRIT. MUS. (N.H.)
BOTANY



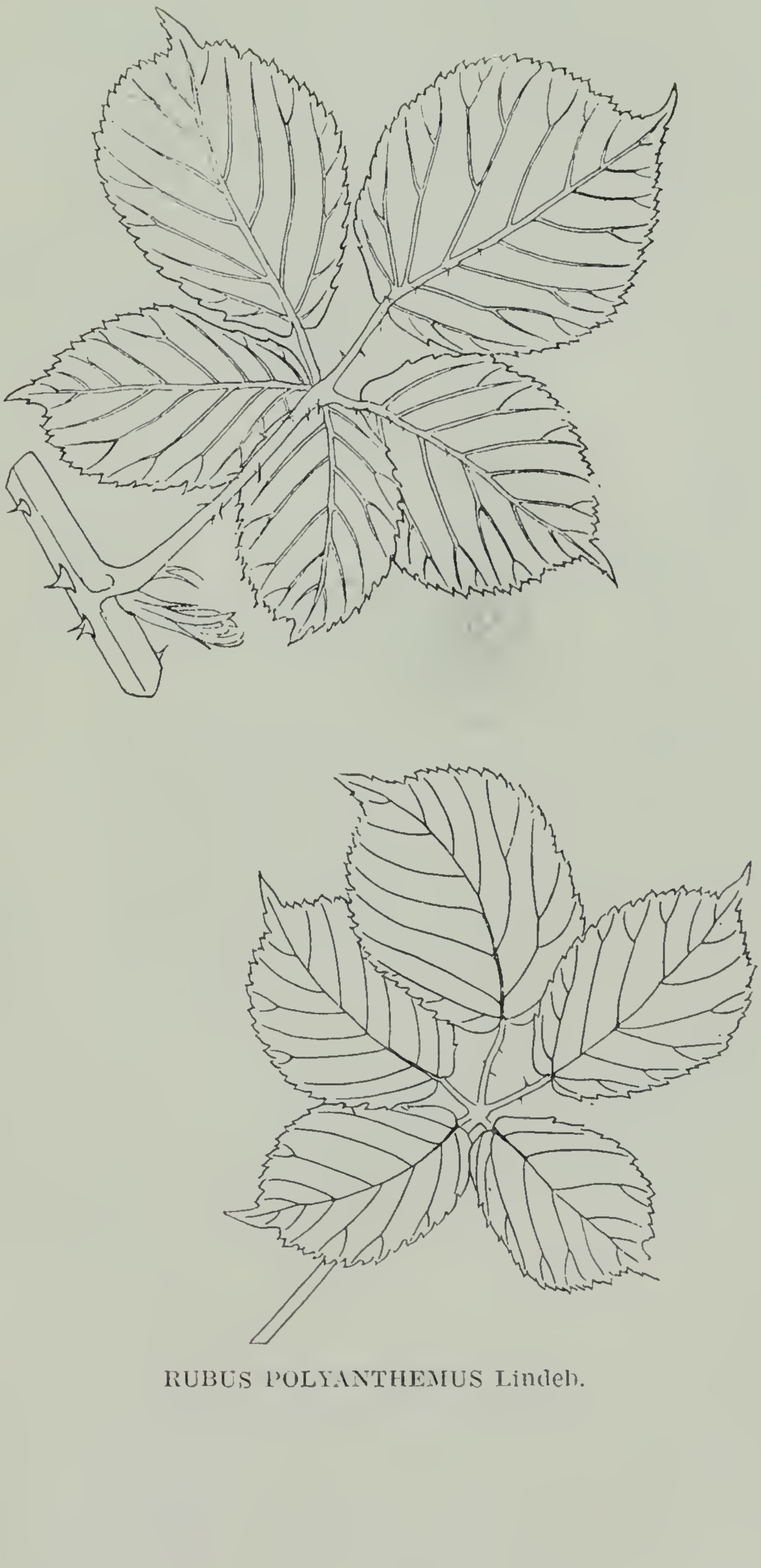
RUBUS CARDIOPHYLLUS L. & M.

BRIT. MUS. (N.H.) BOTANY



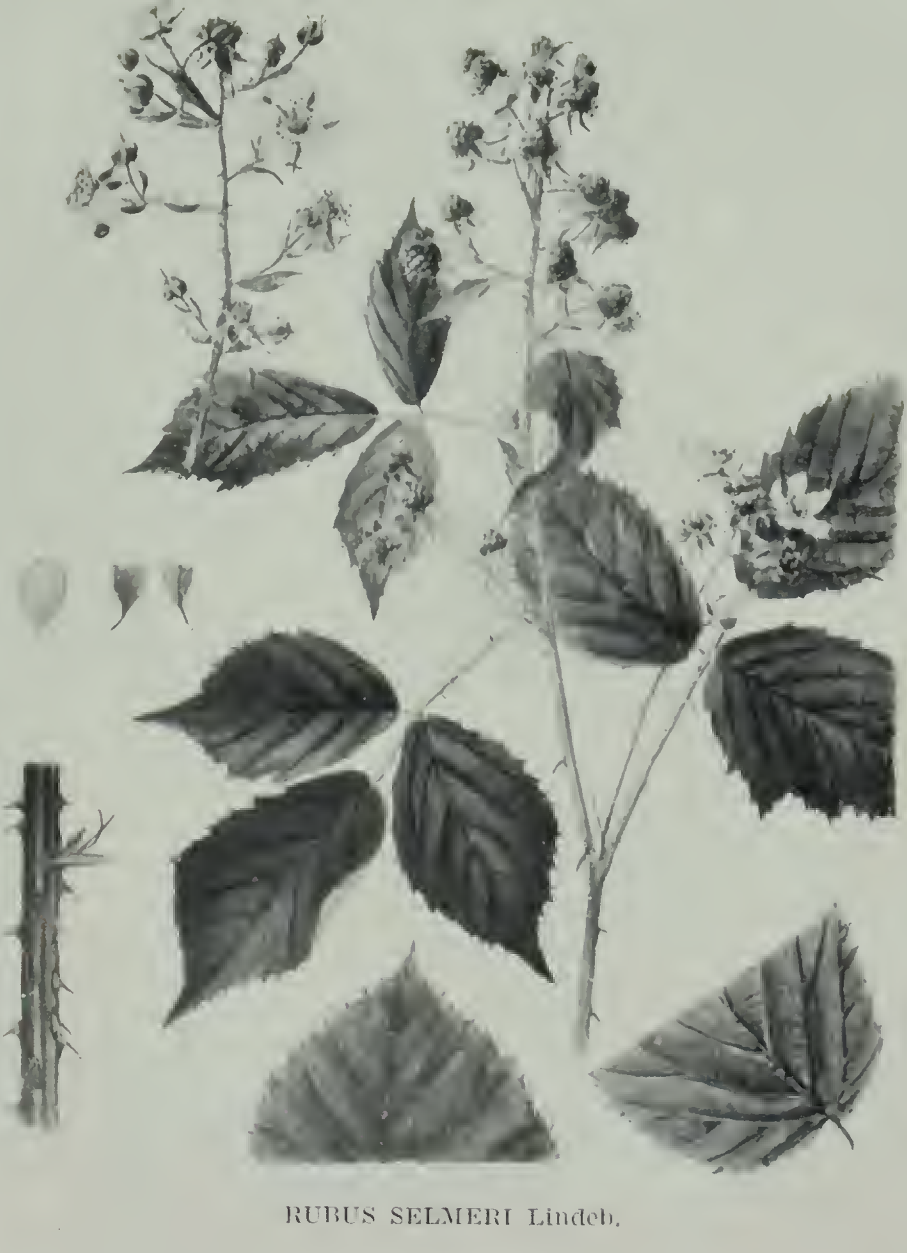
RUBUS POLYANTHEMUS Lindeb.

BRIT. MUS.
BOTANY



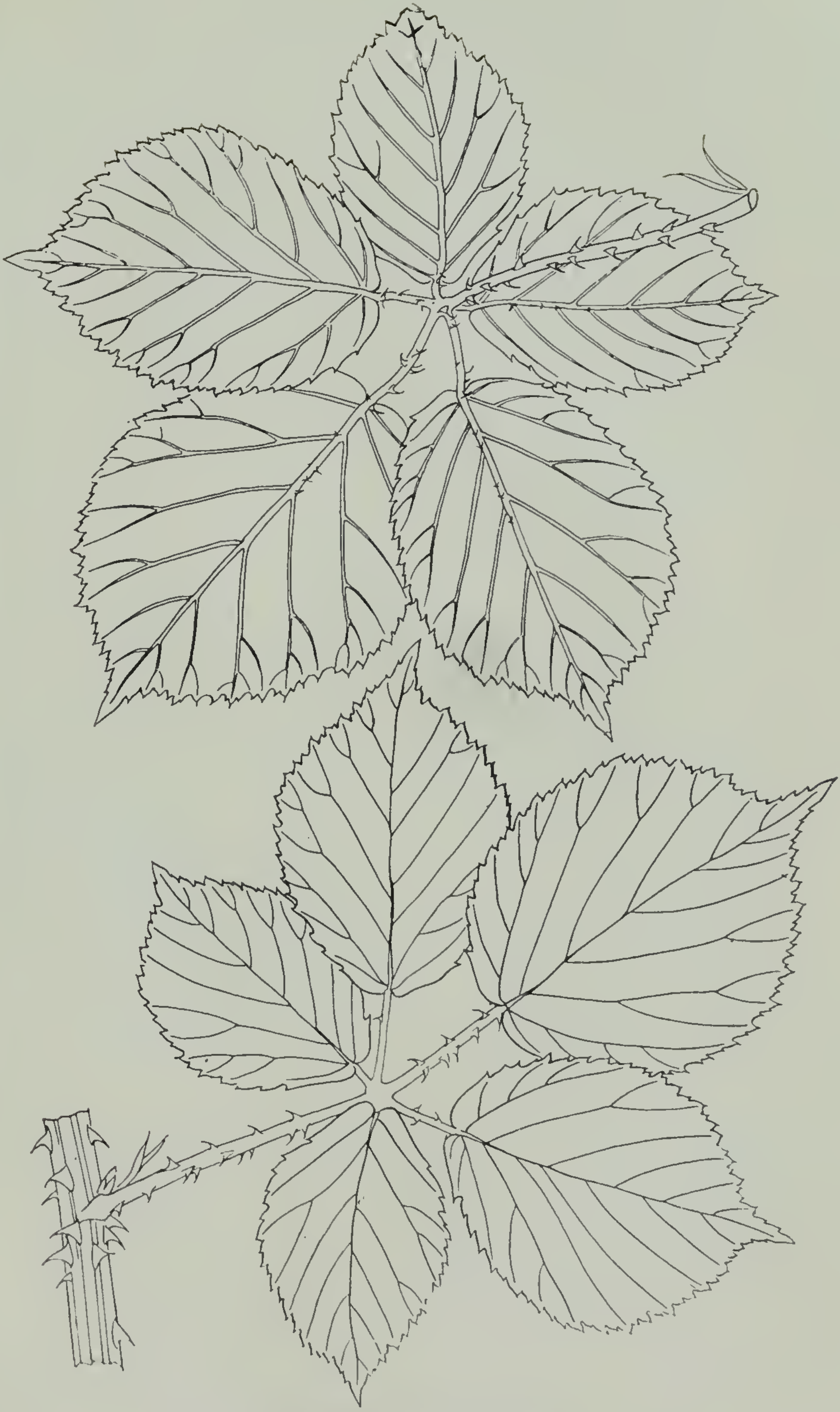
RUBUS POLYANTHEMUS Lindeb.

BRIT. MUS. (N.H.)
BOTANY



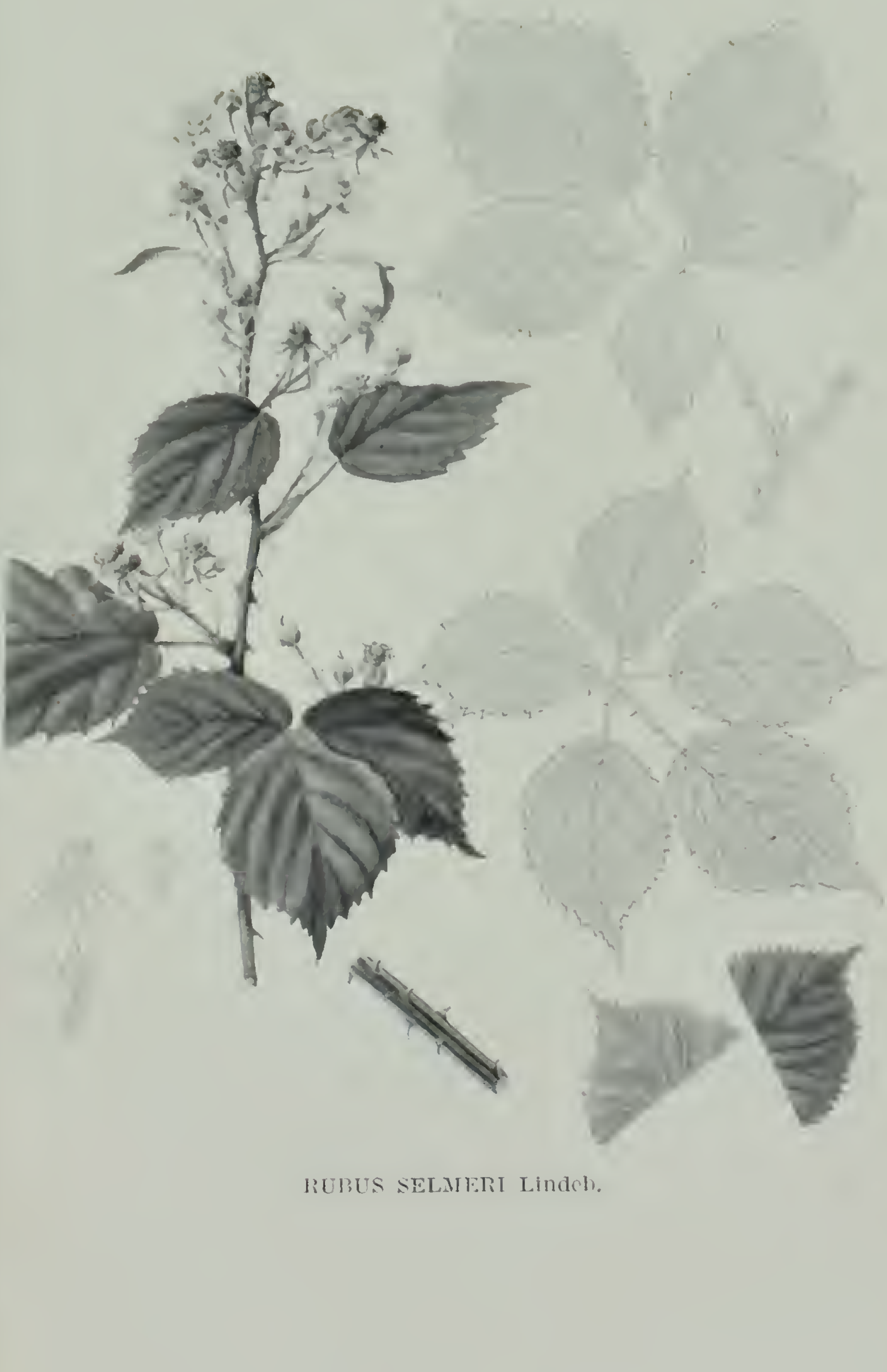
RUBUS SELMERI Lindeb.

BRIT. MUS.
BOTANY



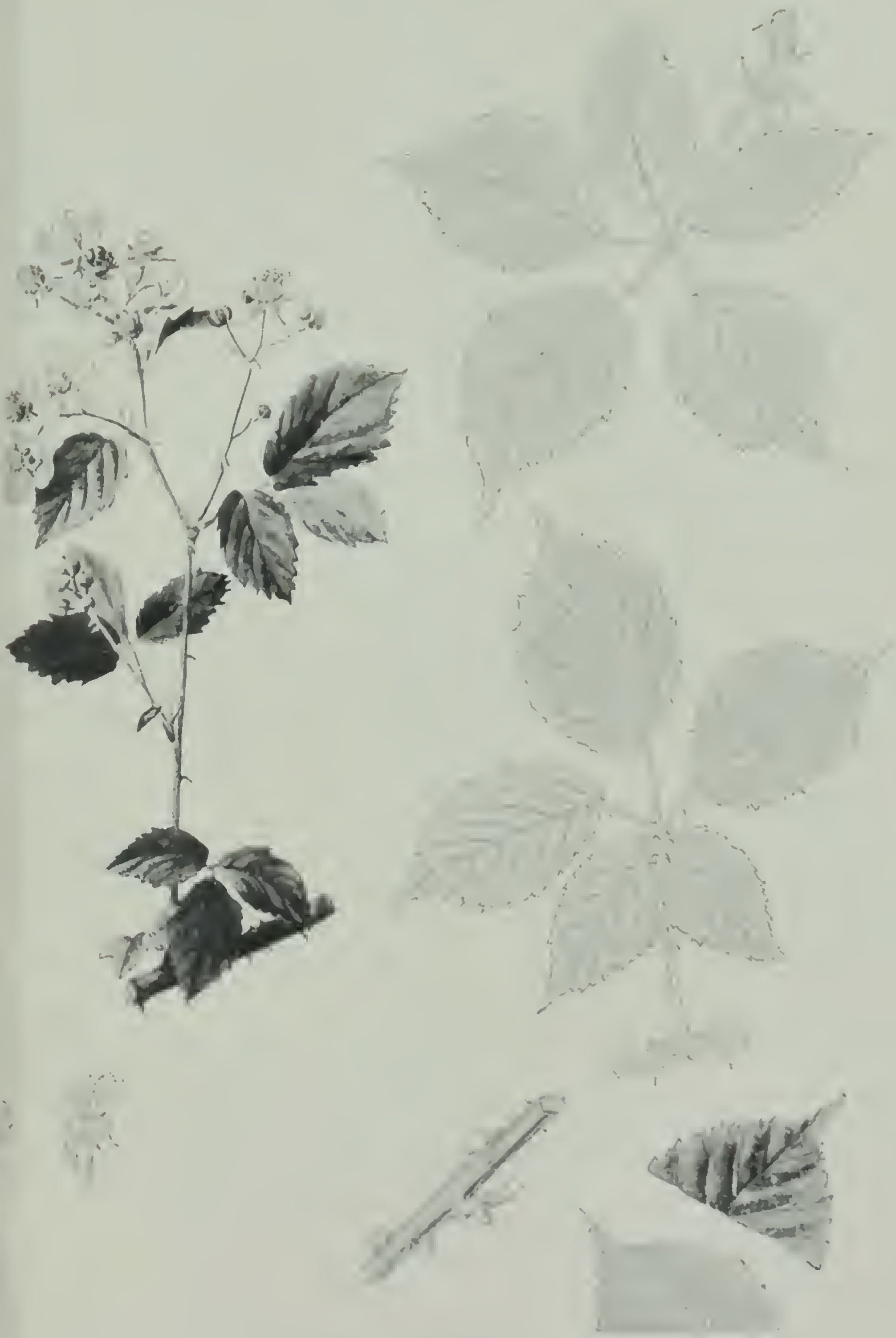
RUBUS SELMERI Lindeb.

BRIT. MUS. (N.H.)
BOTANY



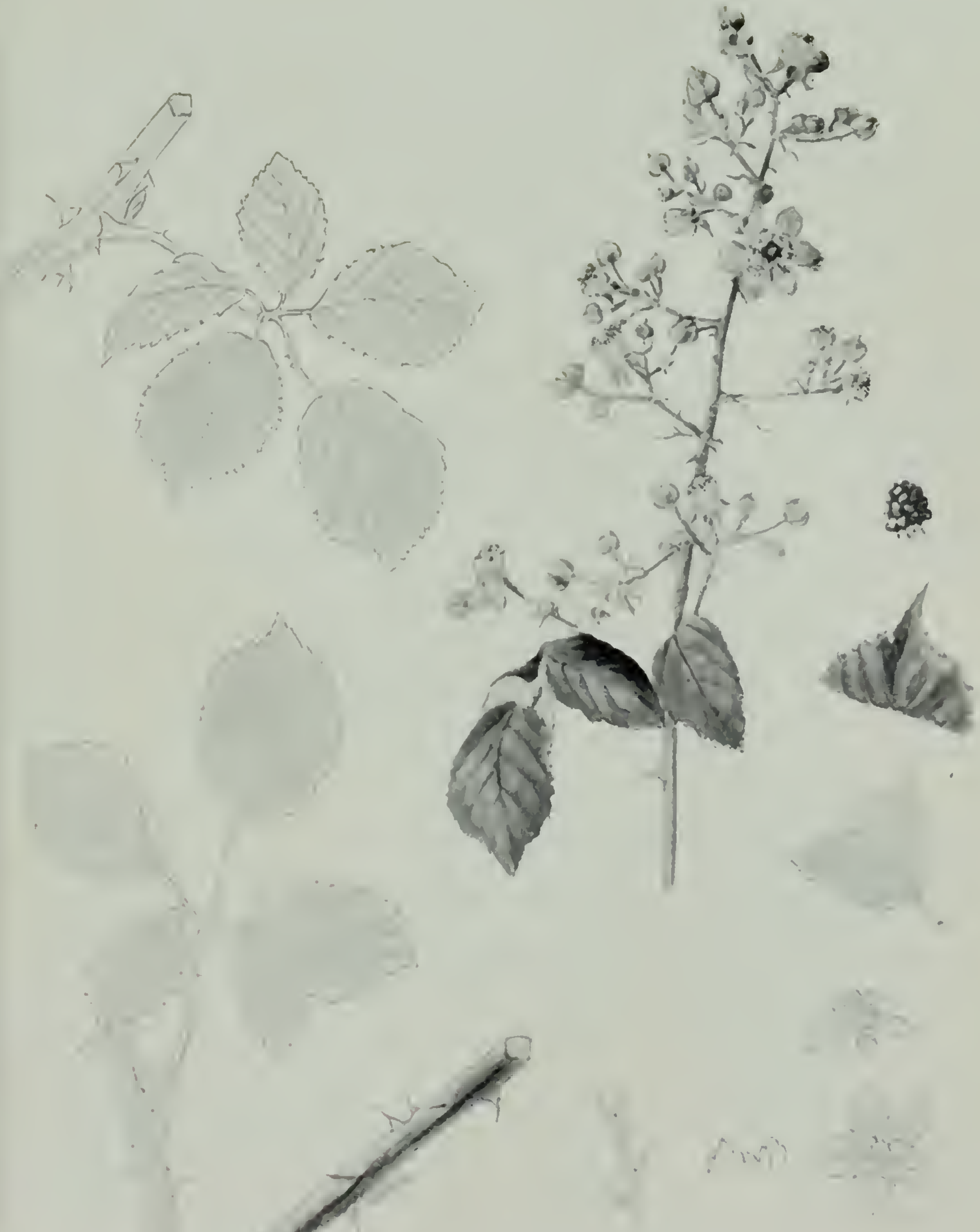
RUBUS SELMERI Lindeb.

BRIT. MUS. (N. H.)
BOTANY



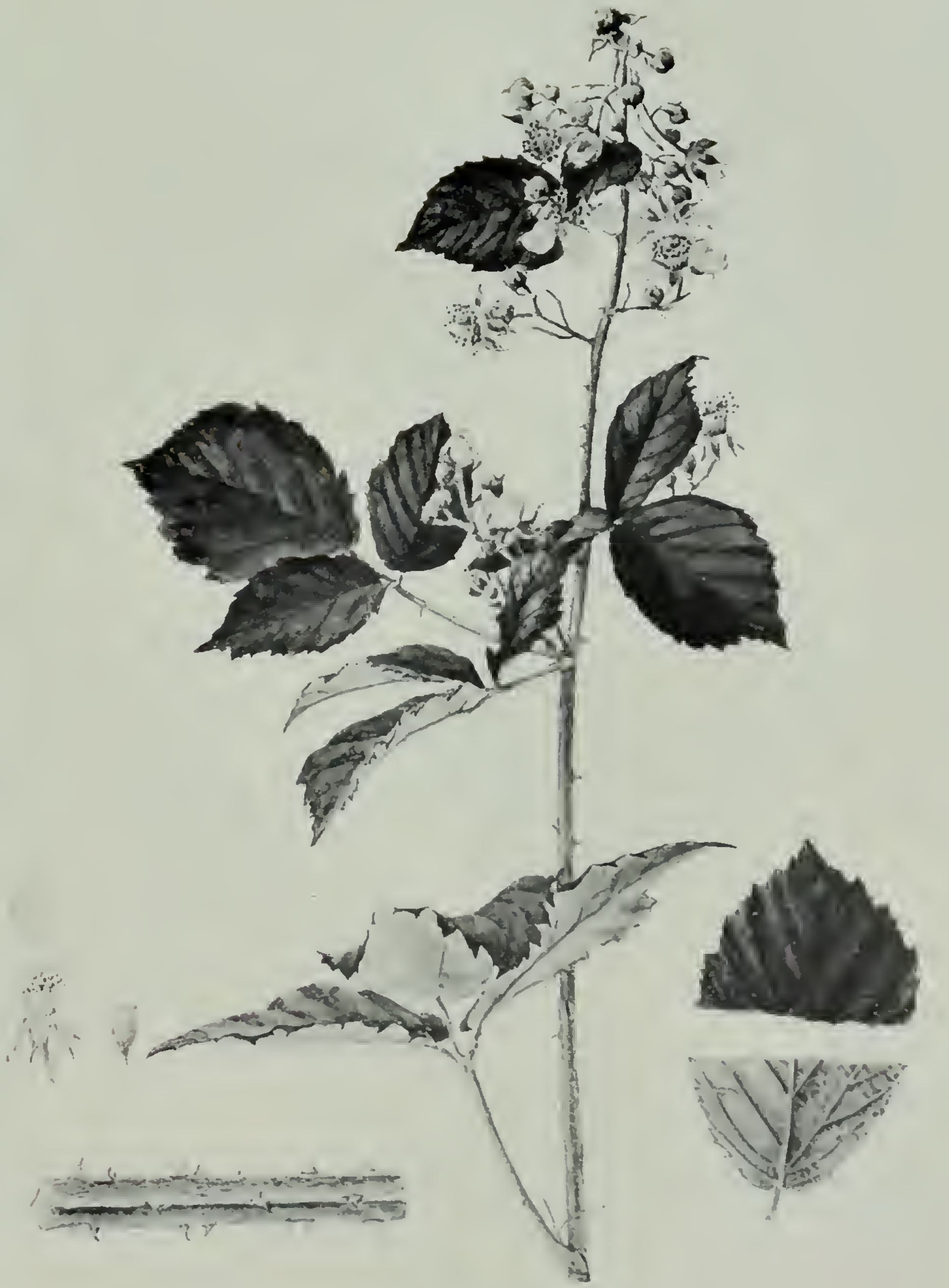
RUBUS RHOMBIFOLIUS Weihe.

BRIT. MUS. (NAT. HIST.)
BOTANY



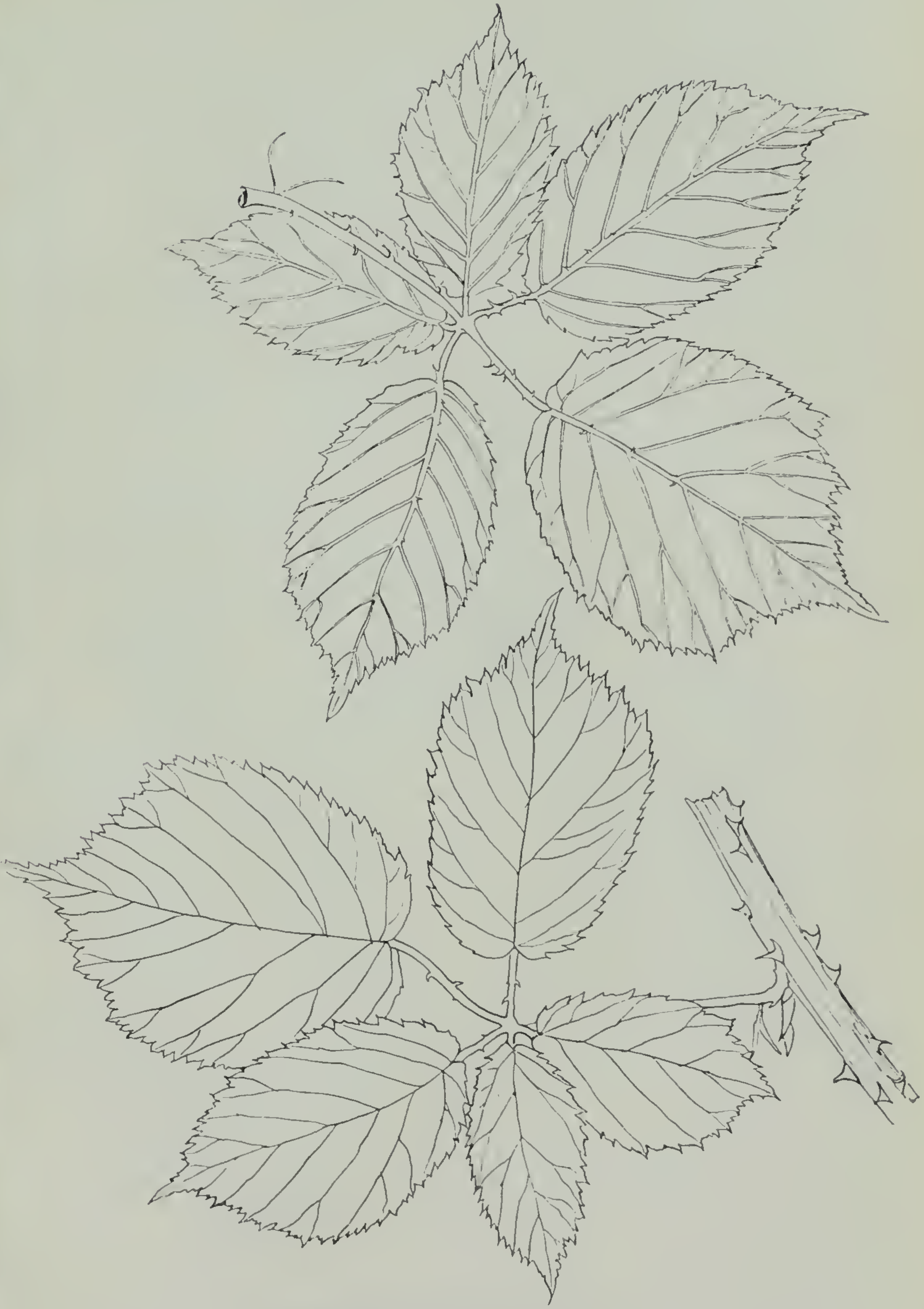
RUBUS ULMIFOLIUS Schott.

BRIT. MUS. (N.H.)
BOTANY



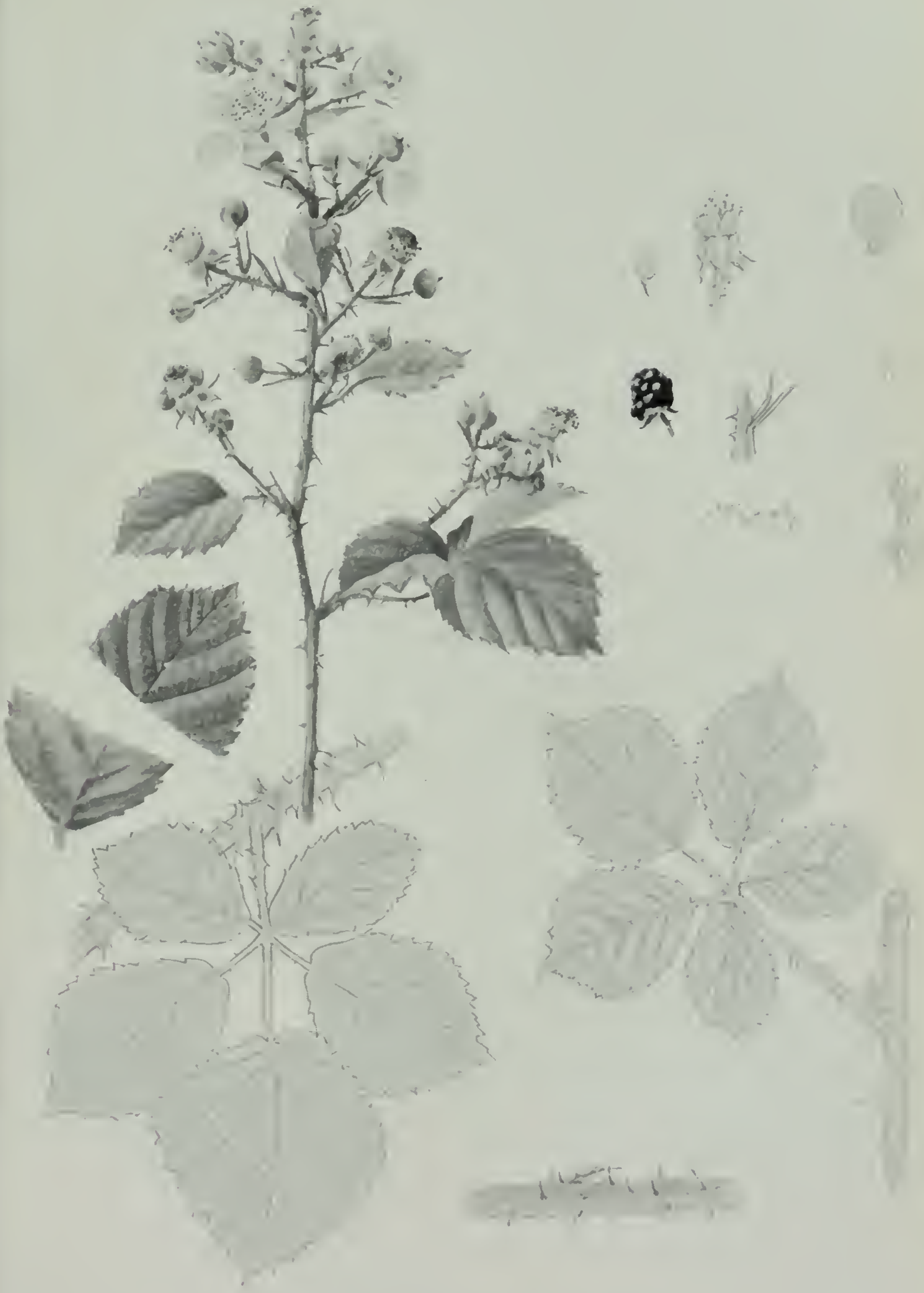
RUBUS SUBINERMOIDES Druce.

BRIT. MUS. (N.H.)
BOTANY



RUBUS SUBINERMOIDES Druce.

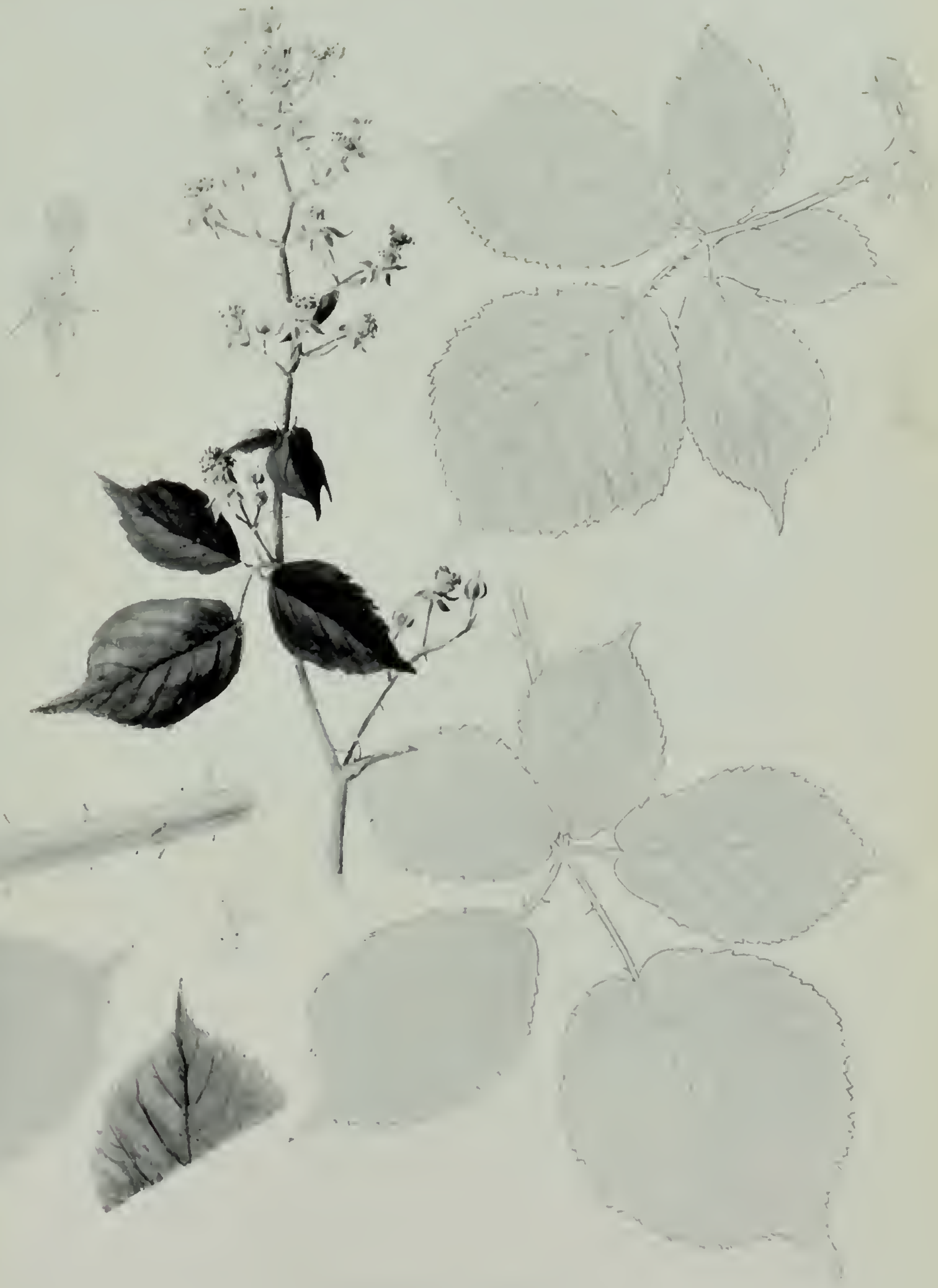
BRIT. MUS. (N. H.)
BOTANY



RUBUS VESTITUS Wh. & N.

No. 16.

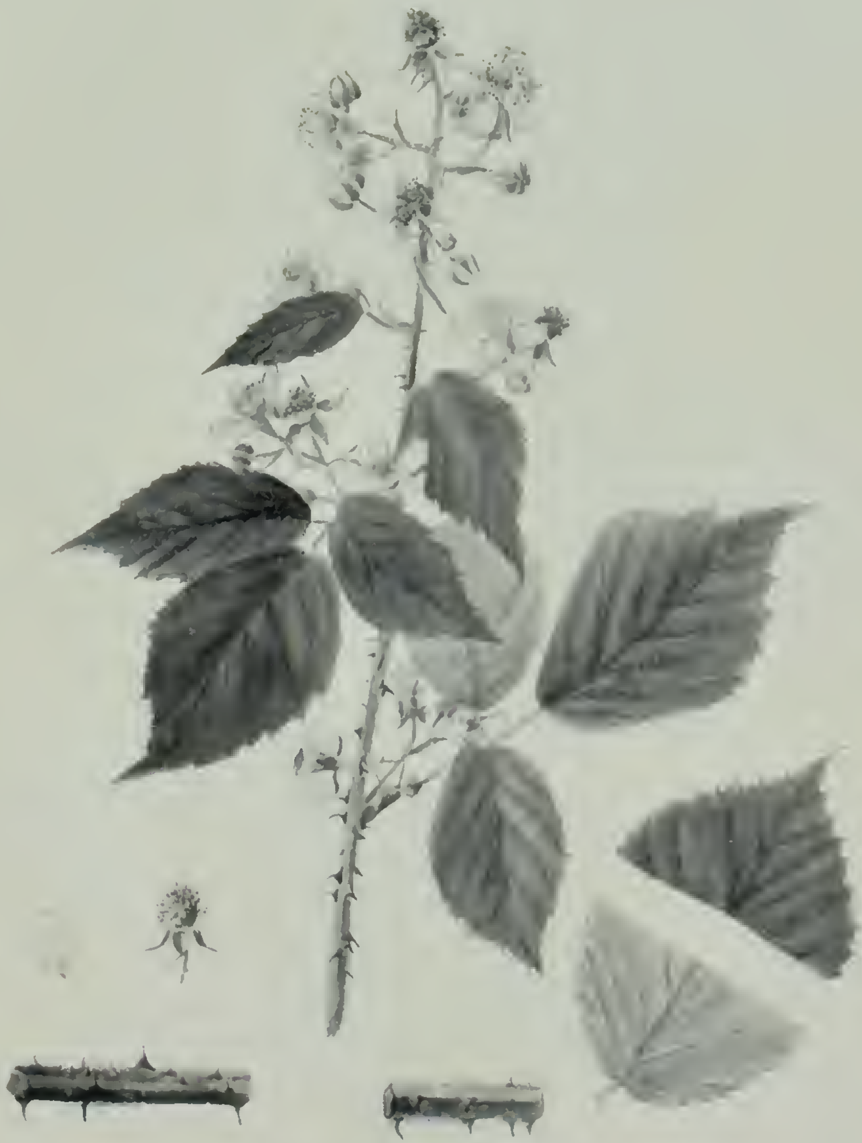
BRIT. MUS. (N.H.) BOTANY



RUBUS VESTITUS Wh. & N.

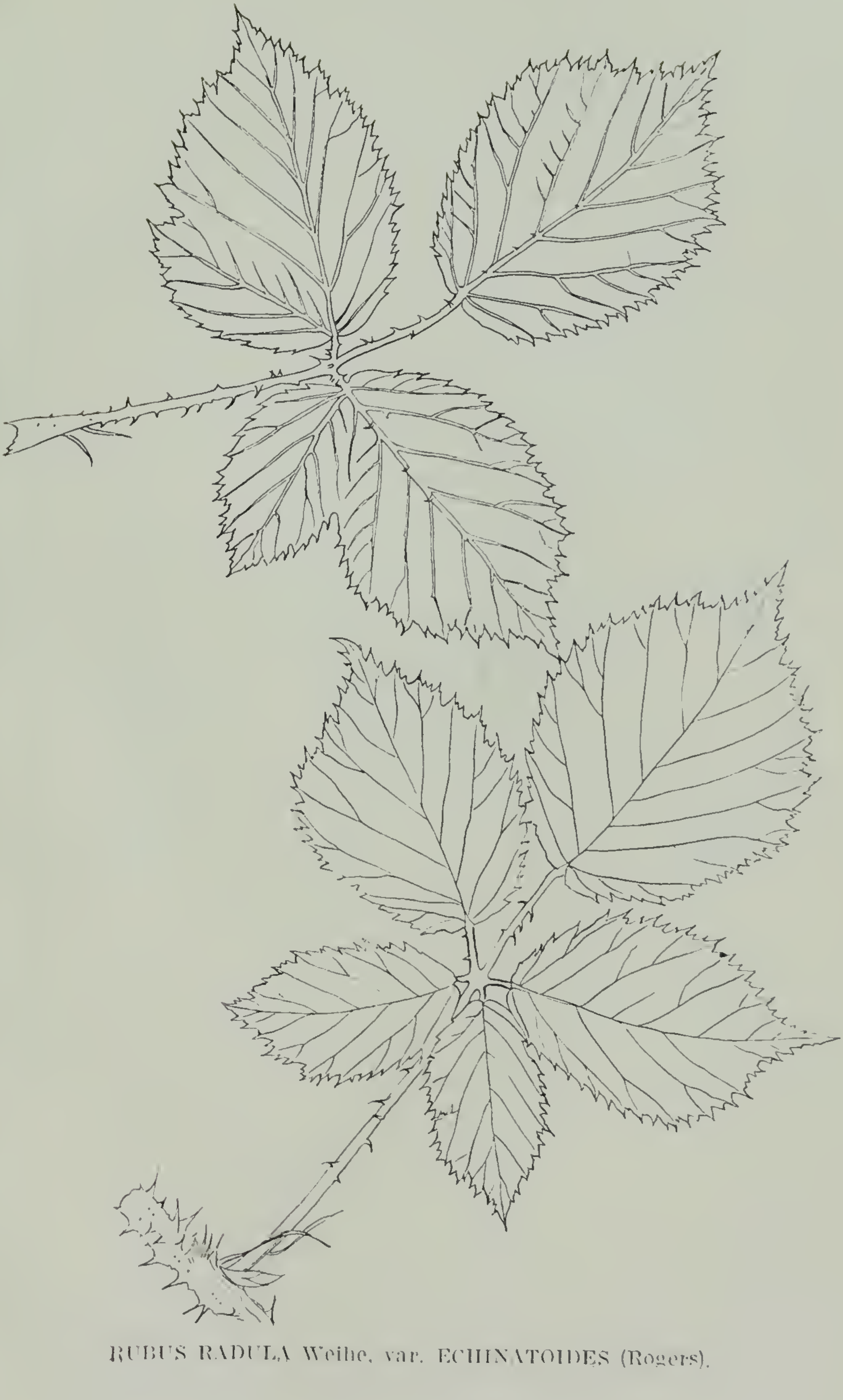
No. 17.

BRIT. MUS. (N.H.)
BOTANY



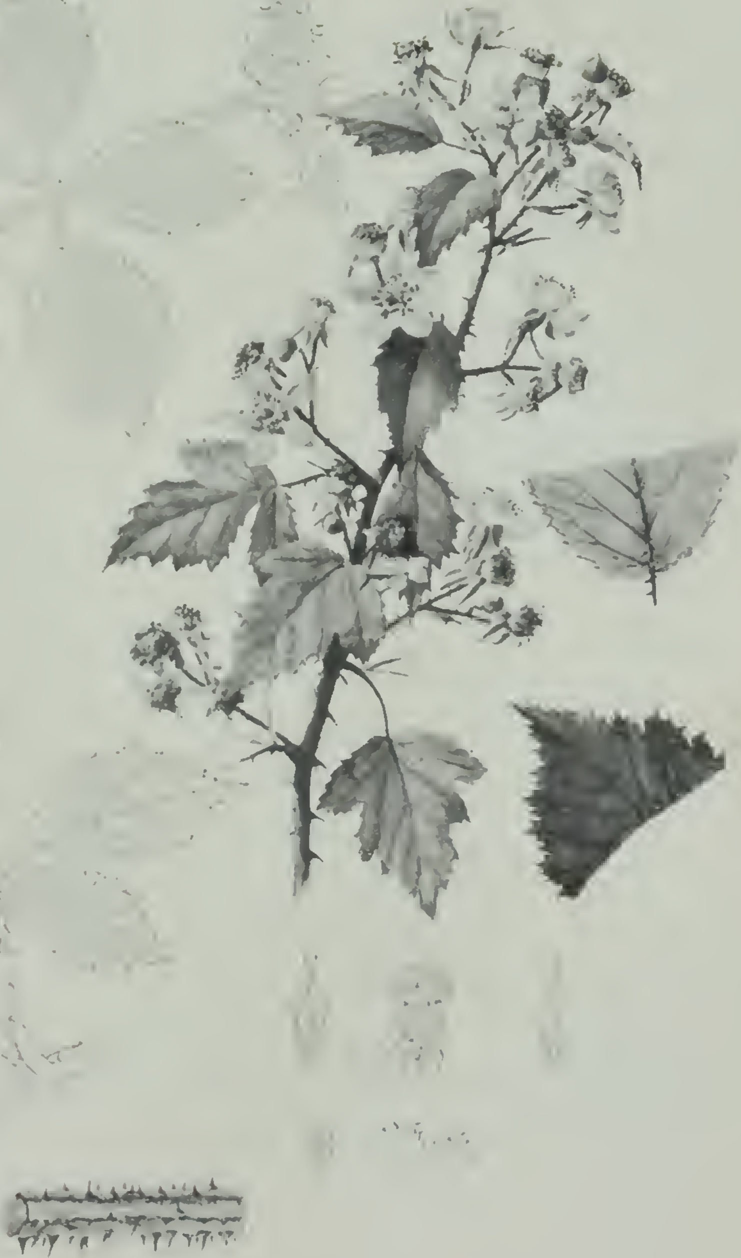
RUBUS RADULA Weihe, var. ECHINATOIDES (Rogers).

BRIT. MUS. (N.H.)
BOTANY



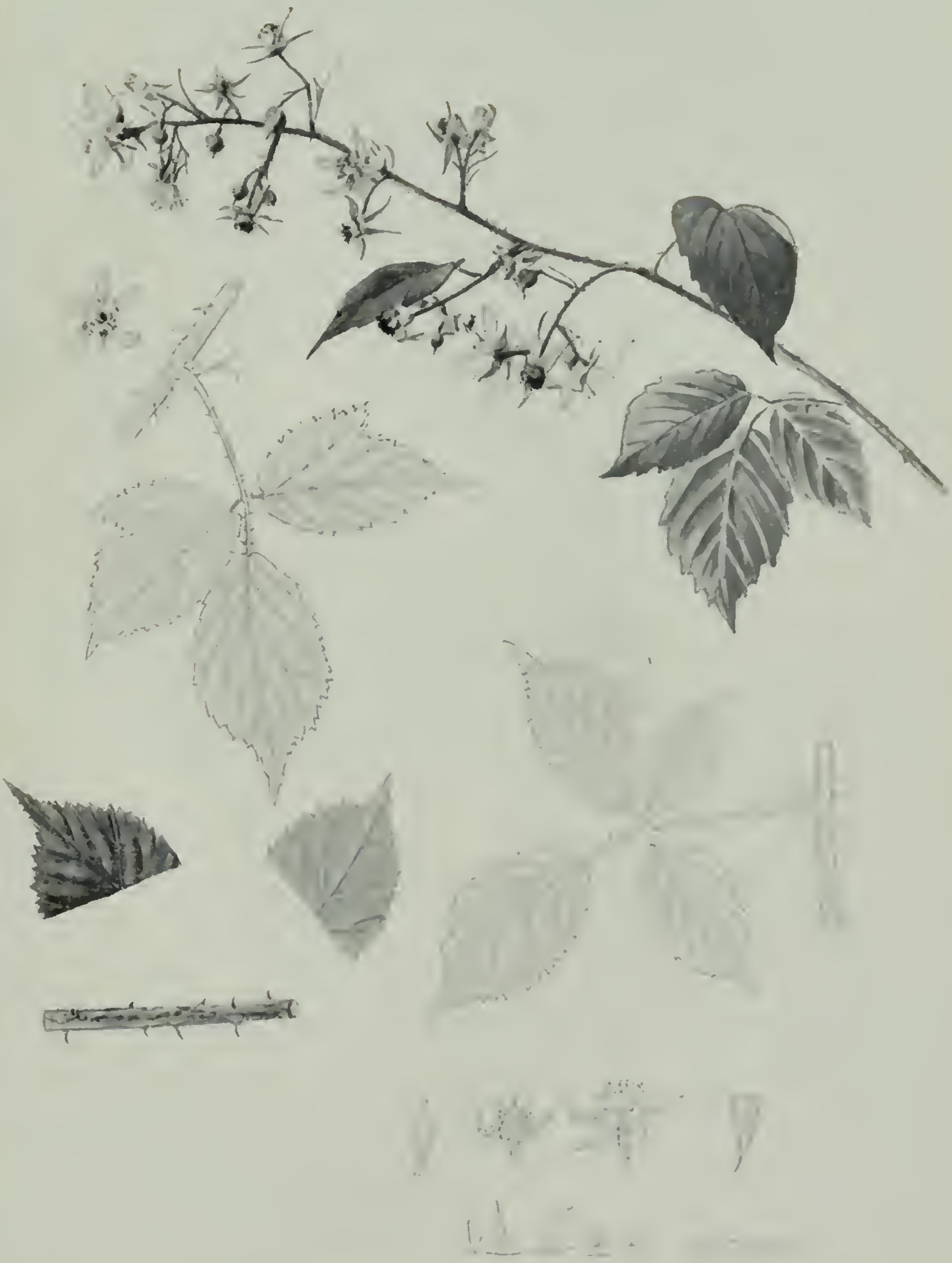
RUBUS RADULA Weihe, var. ECHINATOIDES (Rogers).

BRIT. MUS. (N.H.)
BOTANY



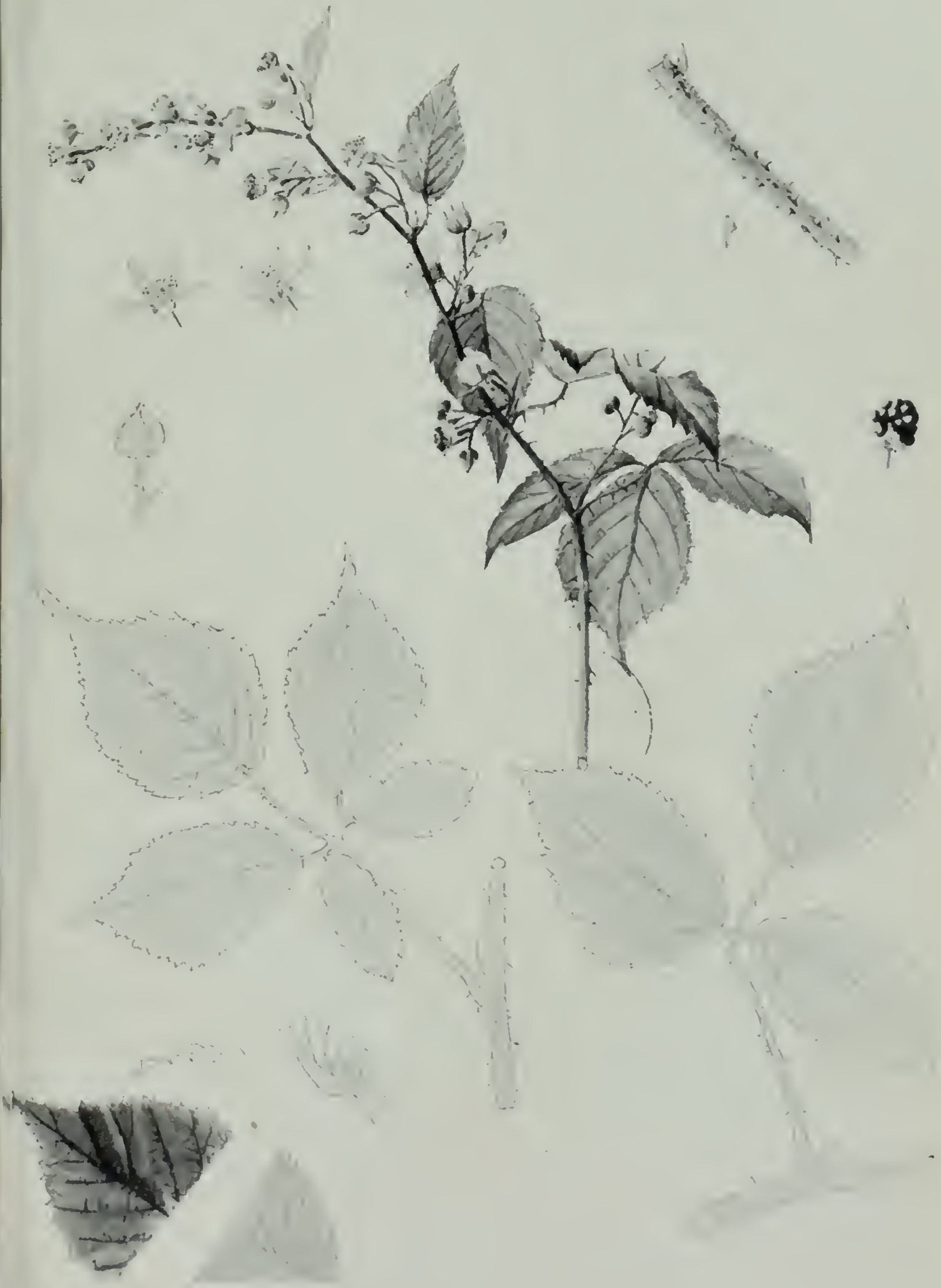
RUBUS DISCERPTUS P. J. Muell.

BRIT. MUS. (N.H.)
BOTANY



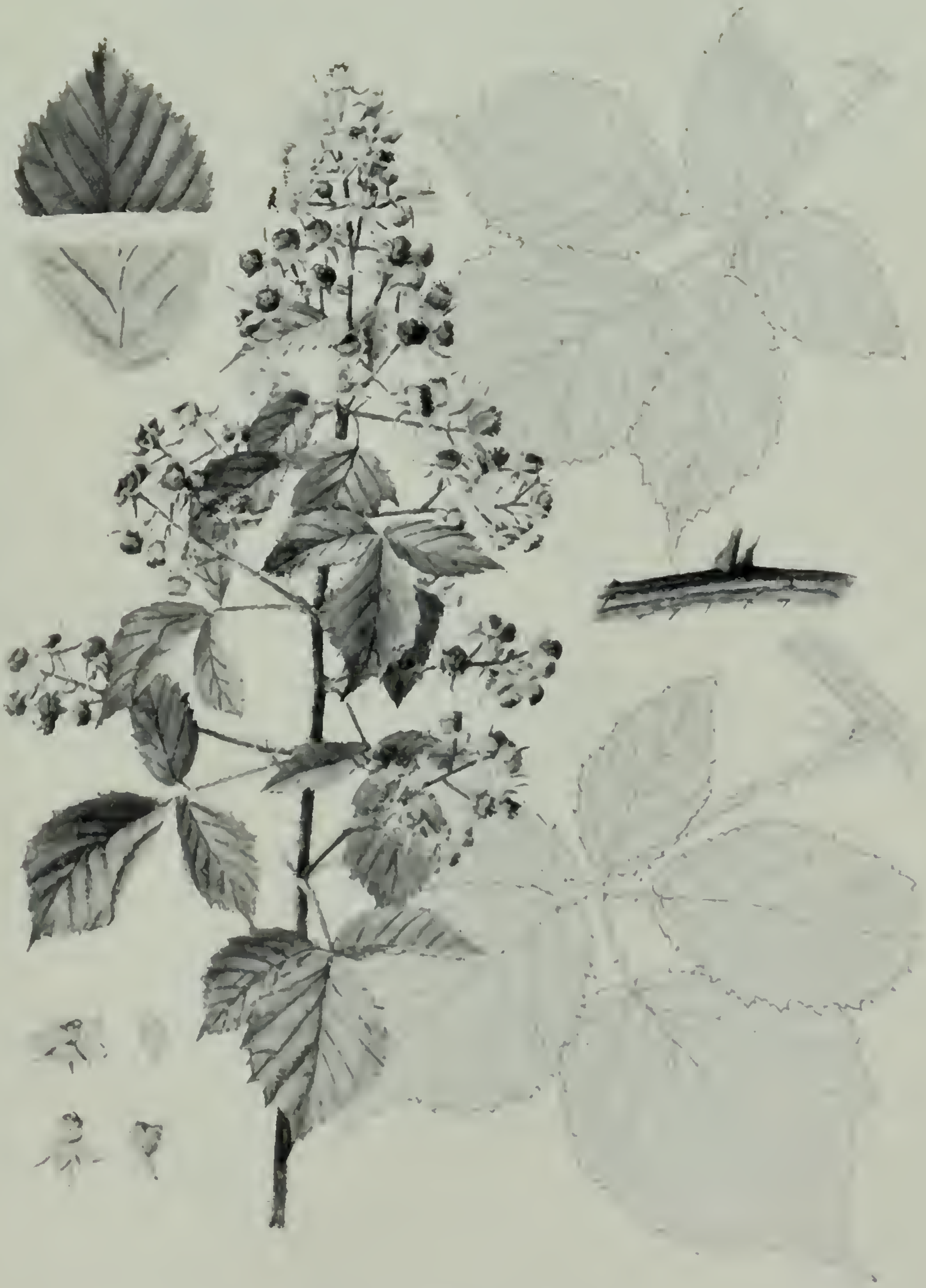
RUBUS MONACHUS G. Jensen.

BRIT. MUS. (N.
BOTANY



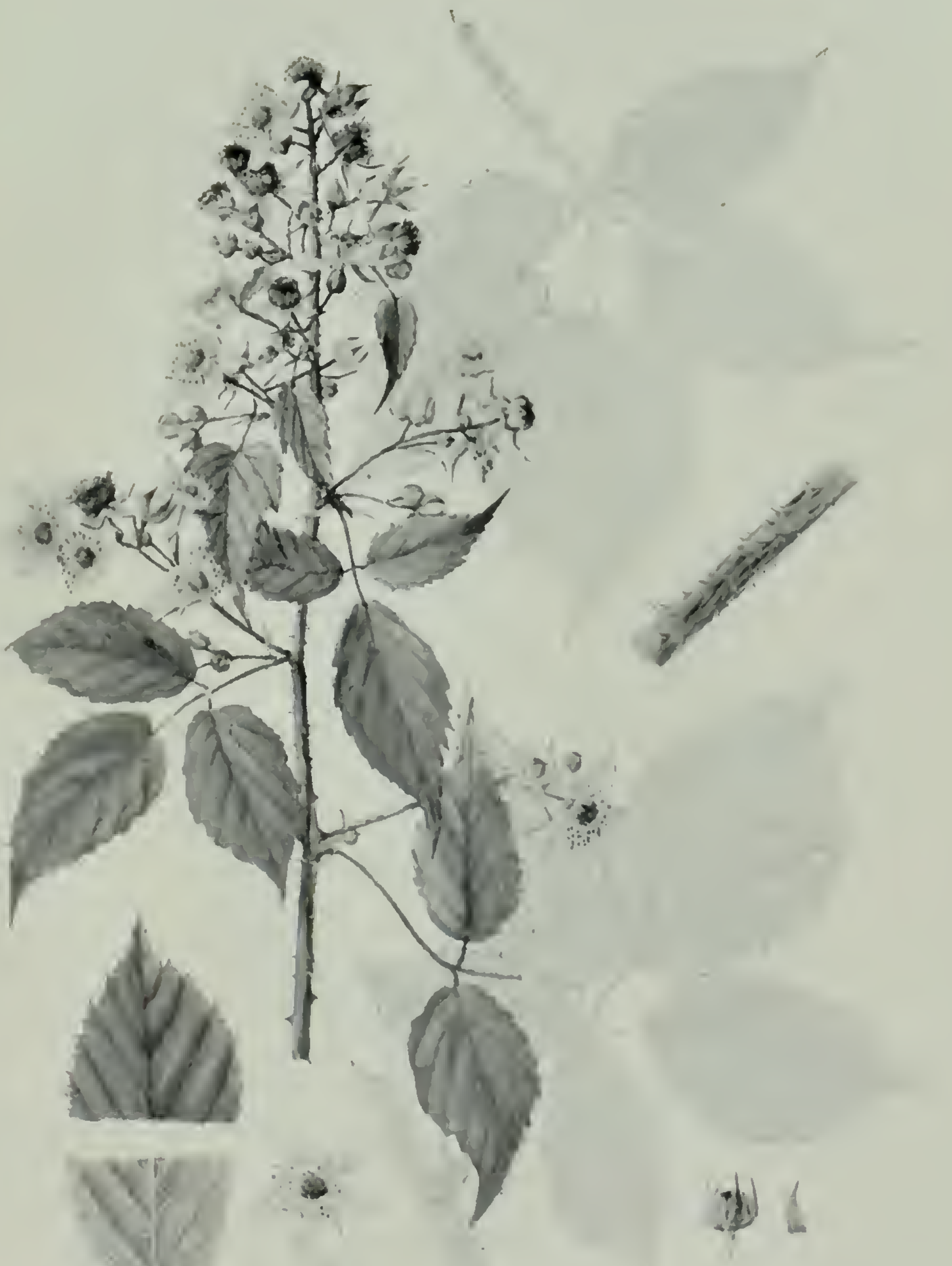
RUBUS FOLIOSUS Wh. & N., var SALTUUM (Focke).

BRIT. MUS. (N.H.)
BOTANY



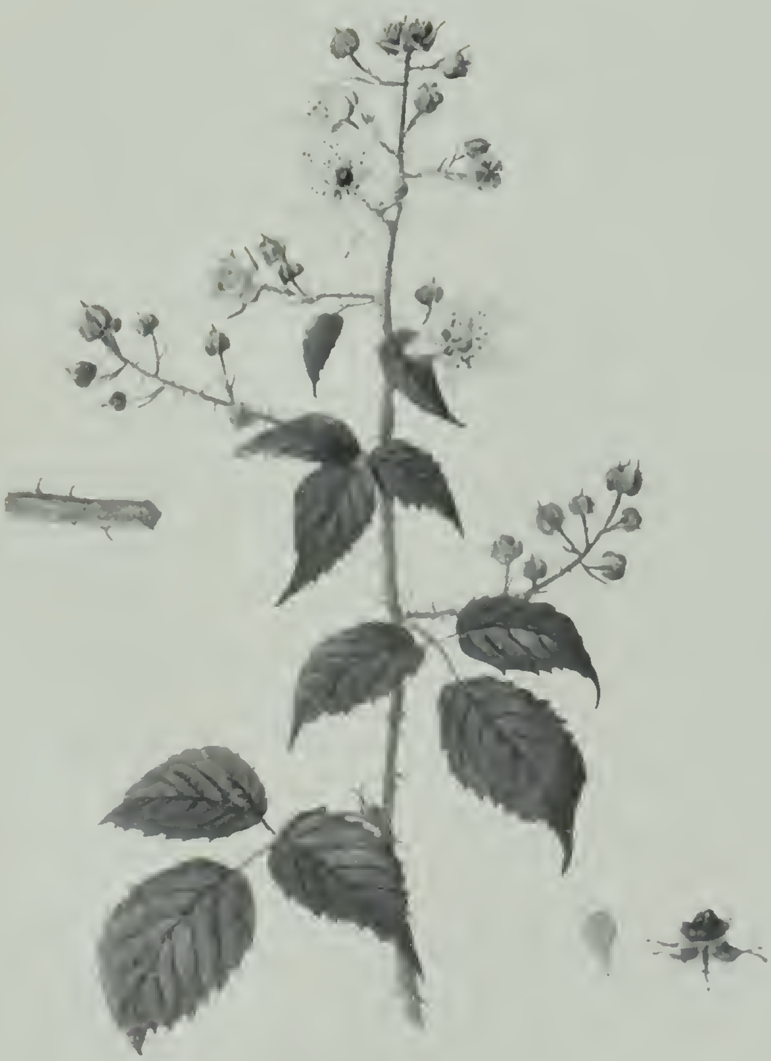
RUBUS ROSACEUS Wh. & N.

BRIT. MUS. (N.H.)
BOTANY



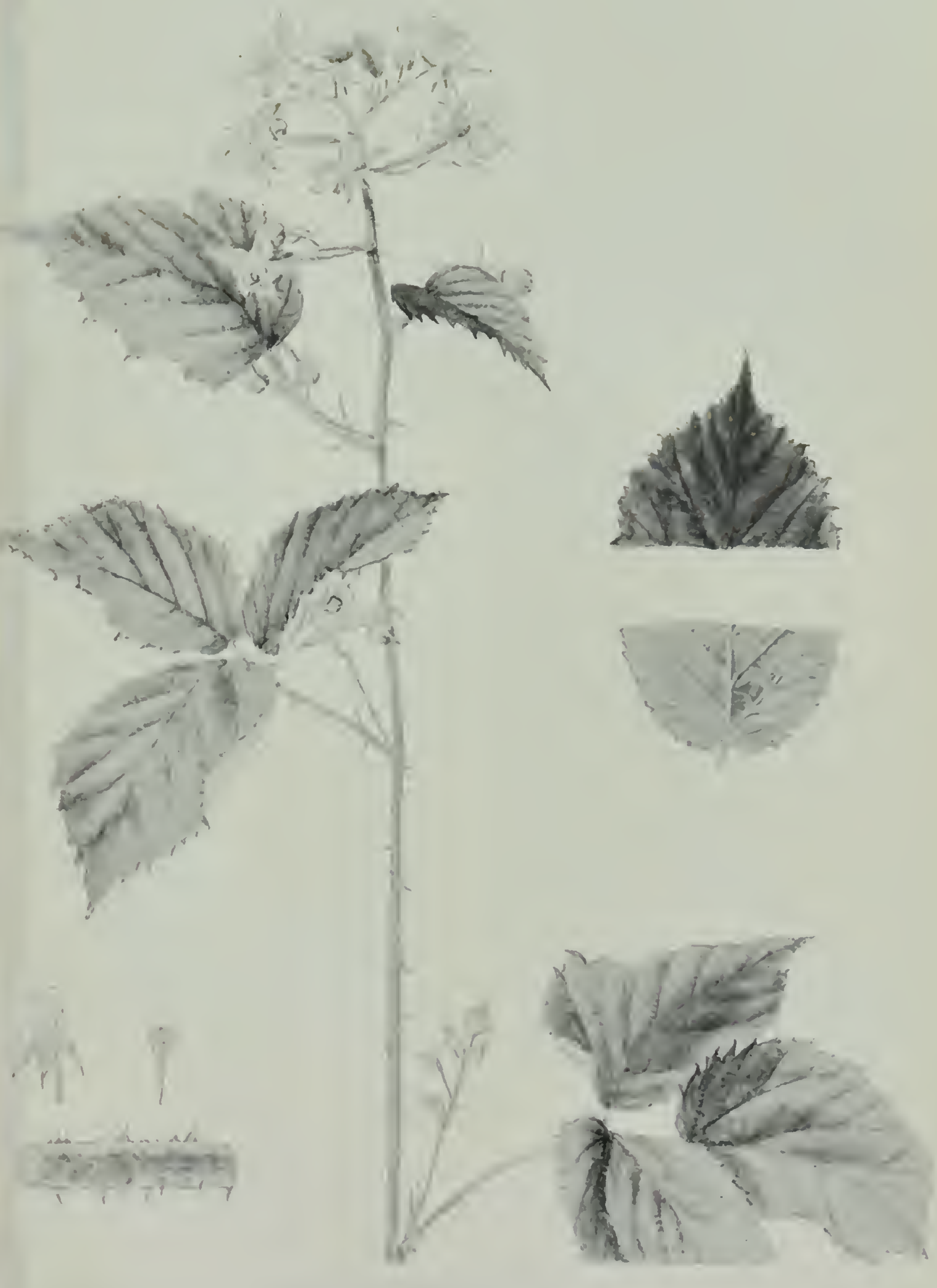
RUBUS ROSACEUS Wh. & N.

BRIT. MUS. (N.H.)
BOTANY



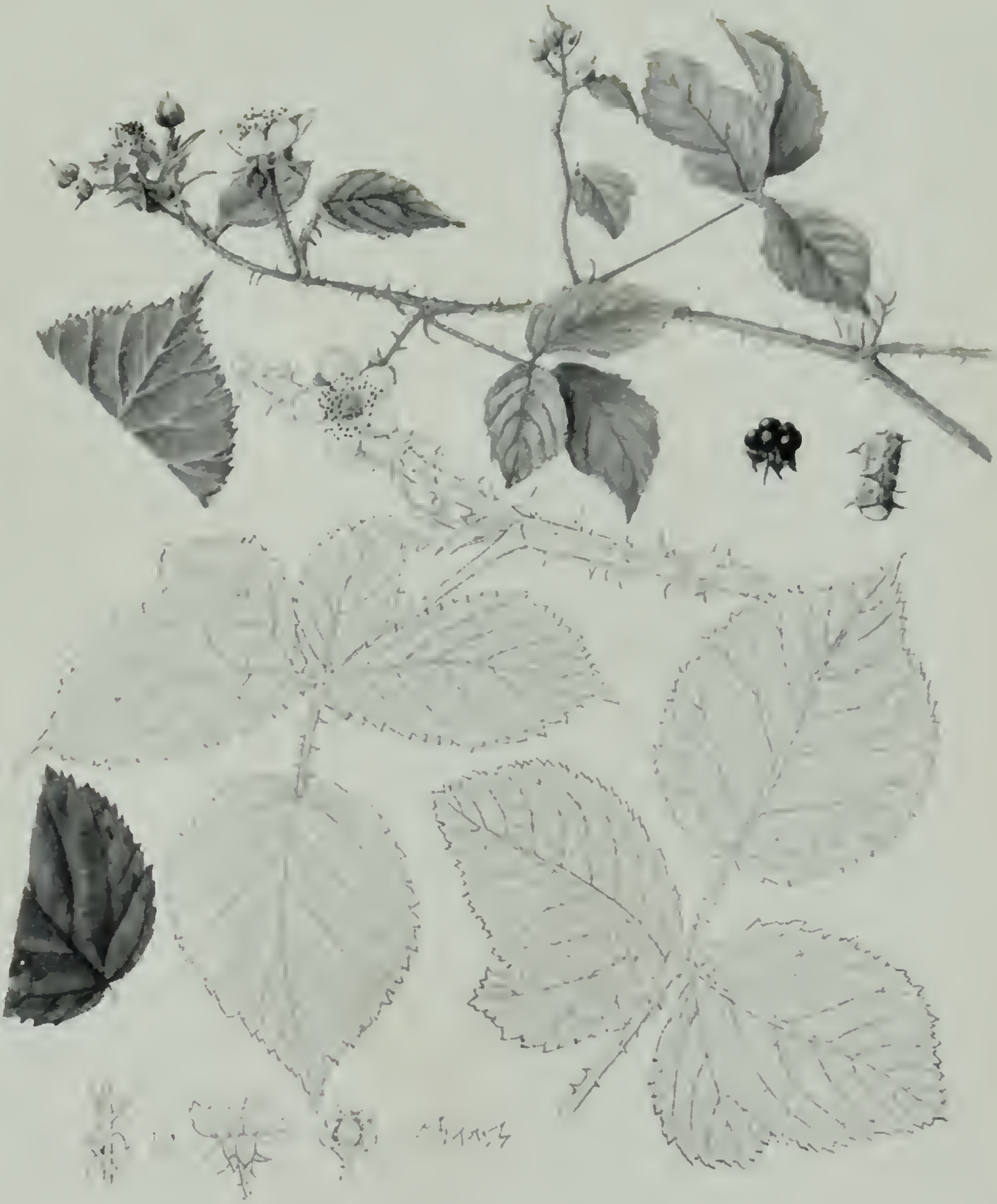
RUBUS RUFESCENS L. & M.

BRIT. MUS. (N.H.)
BOTANY



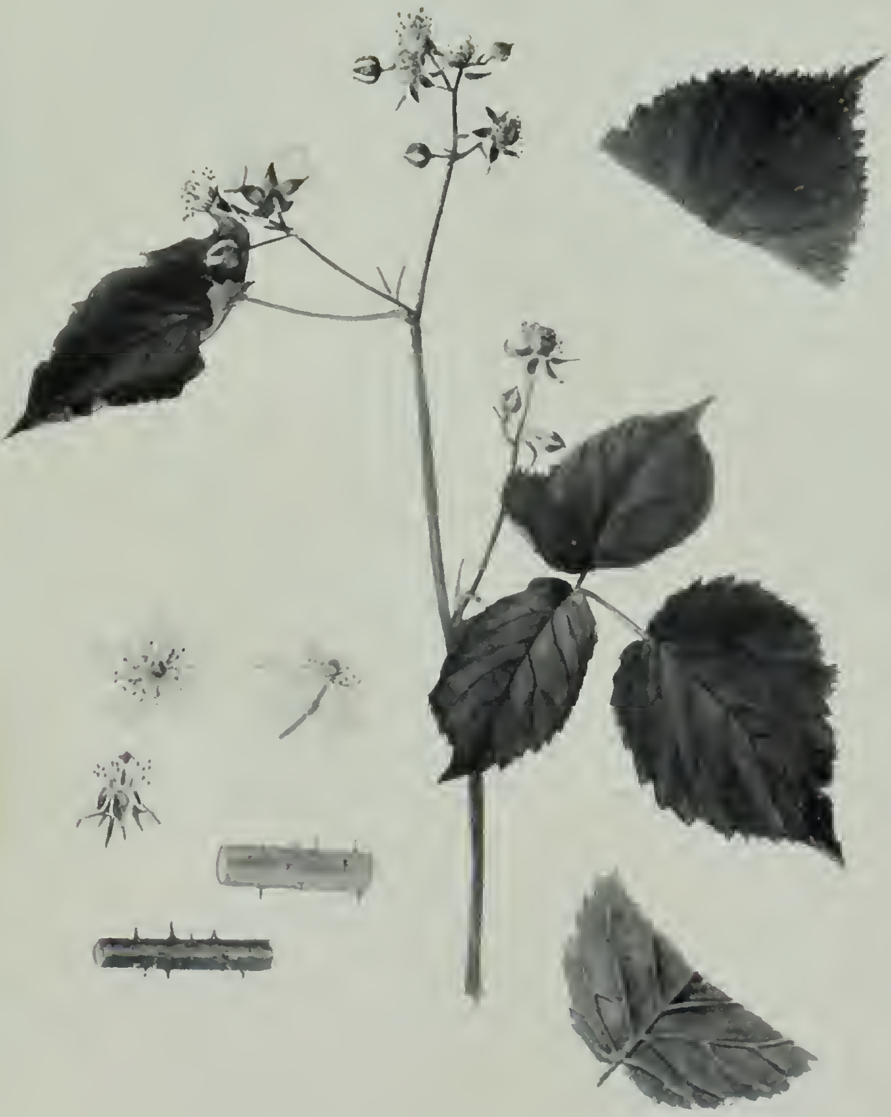
RUBUS DASYPHYLLUS Rogers.

BRIT. MUS. (N.H.)
BOTANY



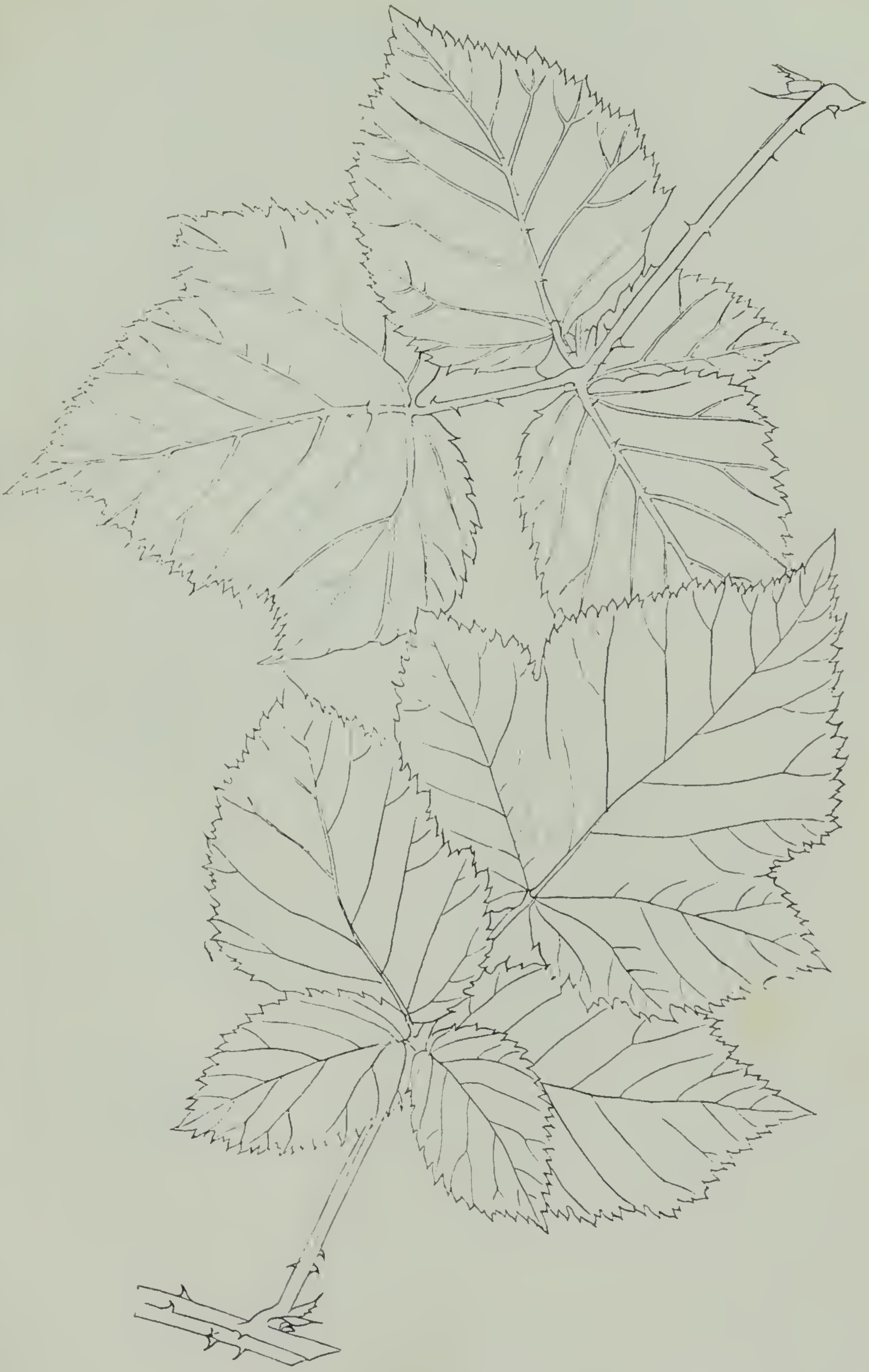
RUBUS DUMETORUM Wh. & N., var. TUBERCULATUS Bab.

BRIT. MUS. (N.H.)
BOTANY



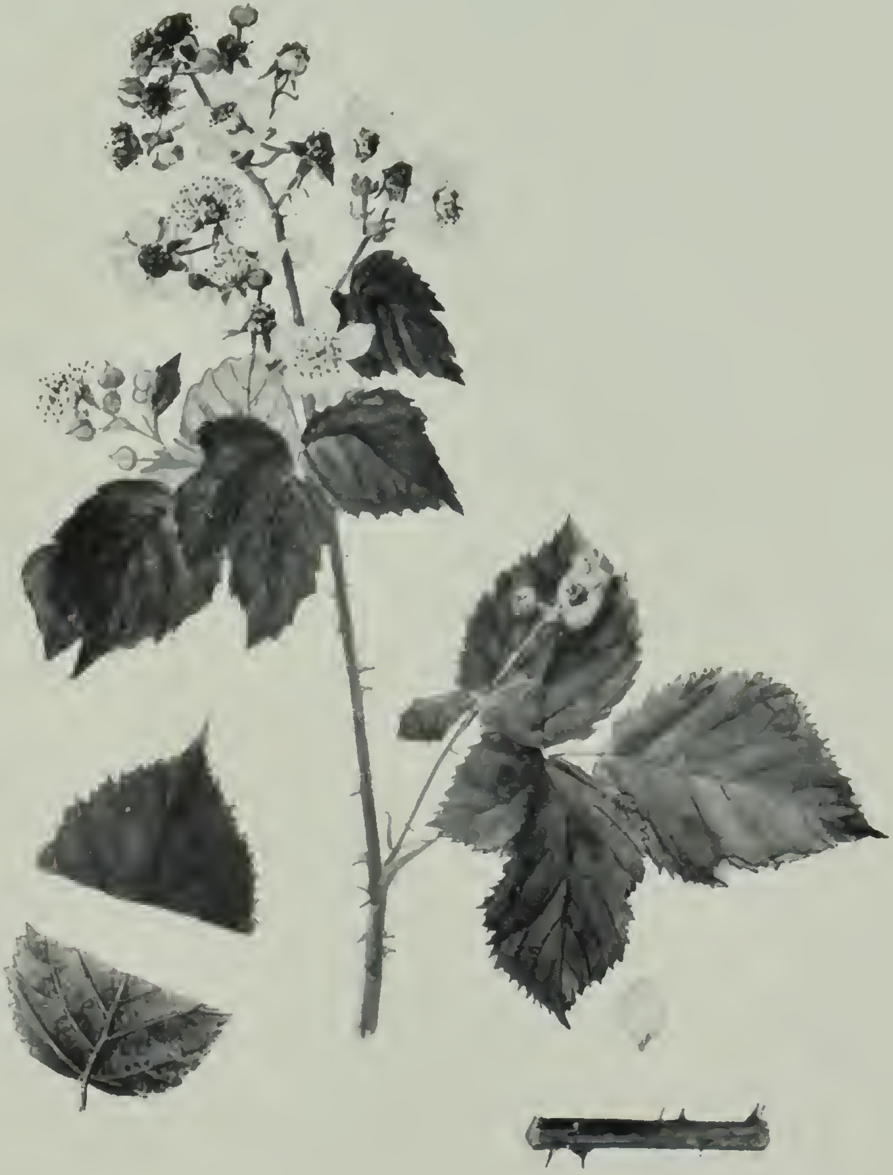
RUBUS CORYLIFOLIUS Sm., var. SUBLUSTRIS (Lees).

BRIT. MUS. (N.H.)
BOTANY



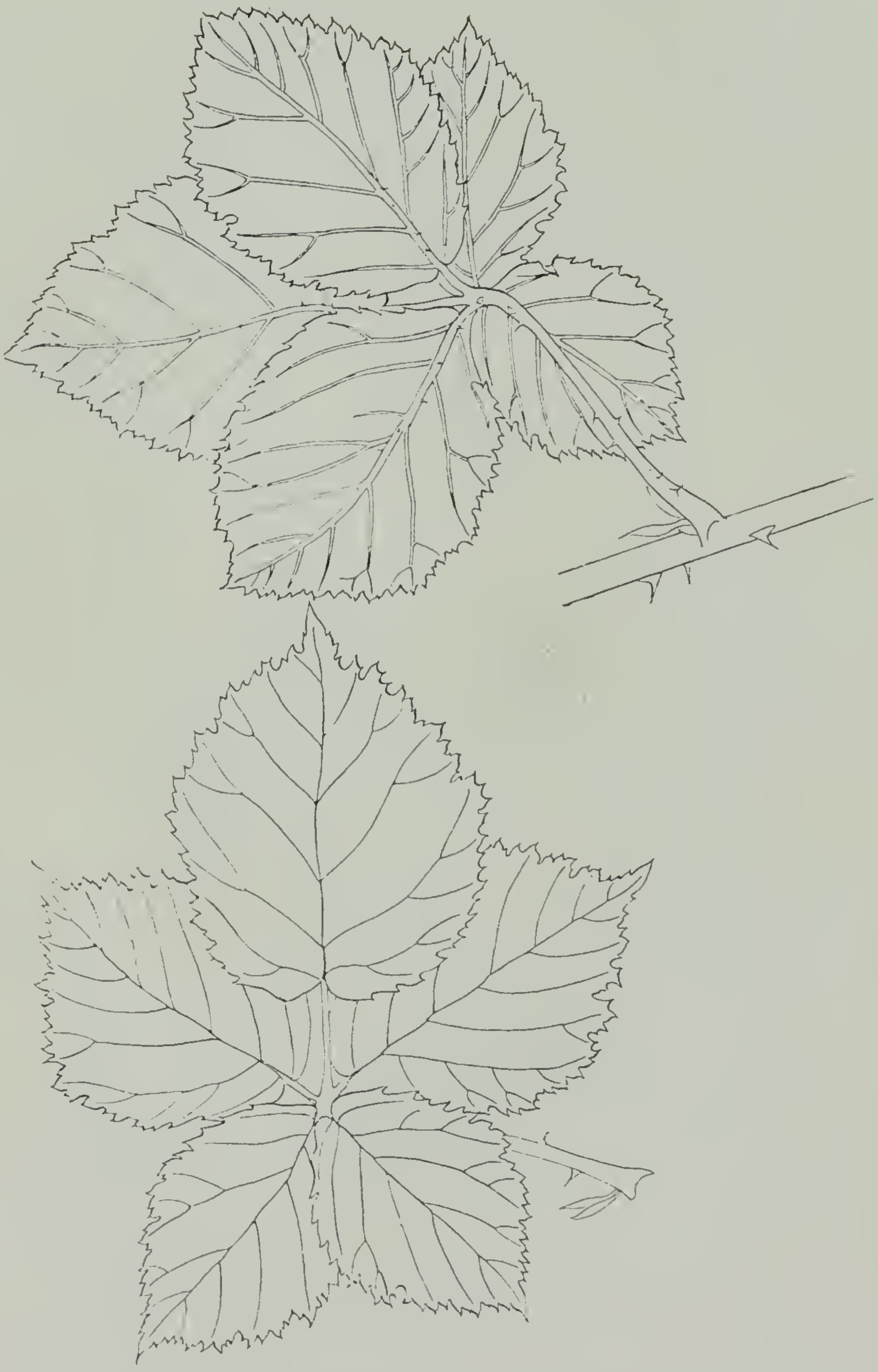
RUBUS CORYLIFOLIUS Sm., var. SUBLUSTRIS (Lees).

BRIT. MUS. (N.H.)
BOTANY



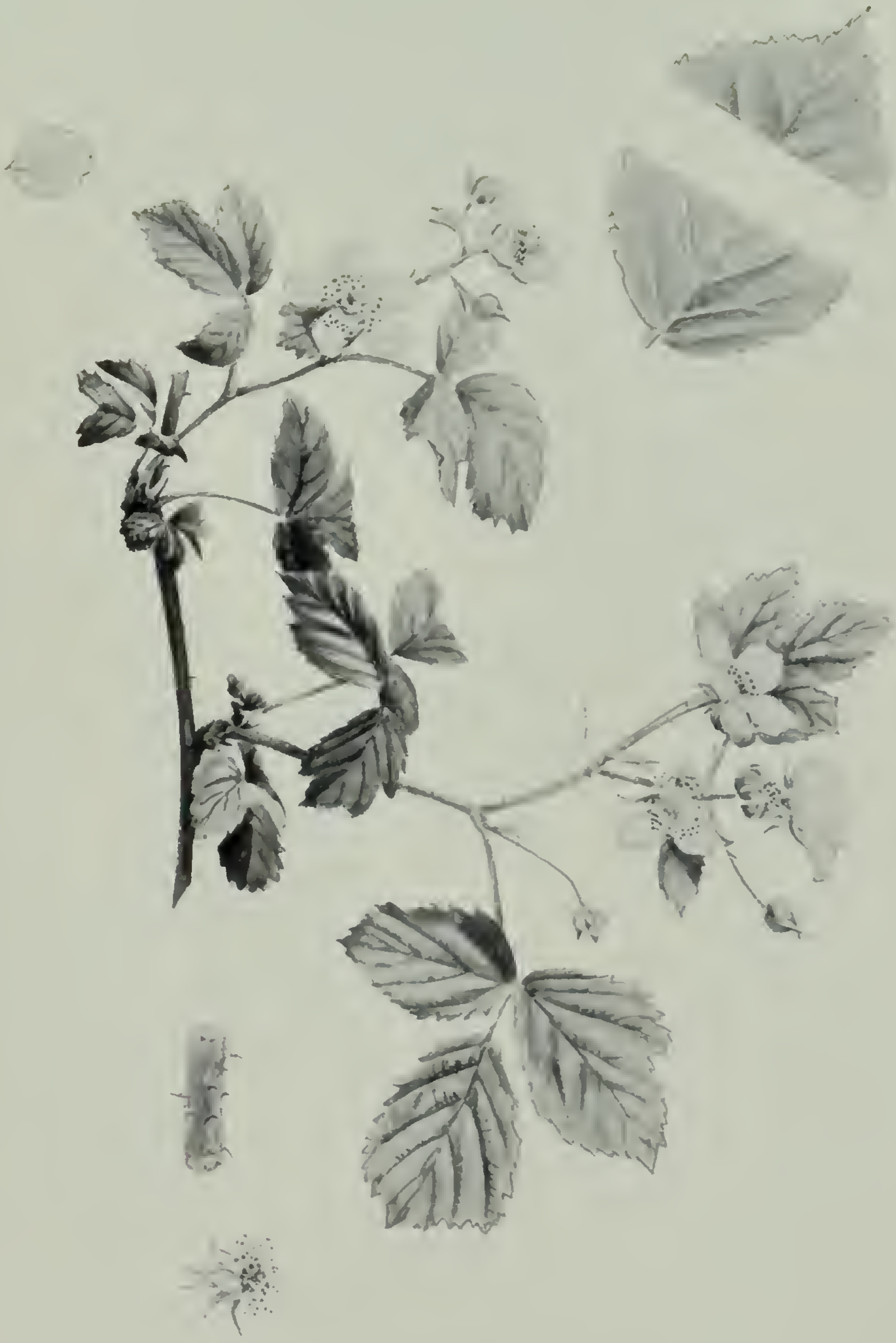
RUBUS CORYLIFOLIUS Sm., var. CONJUNGENS Bab.

BRIT. MUS.
BOTANY



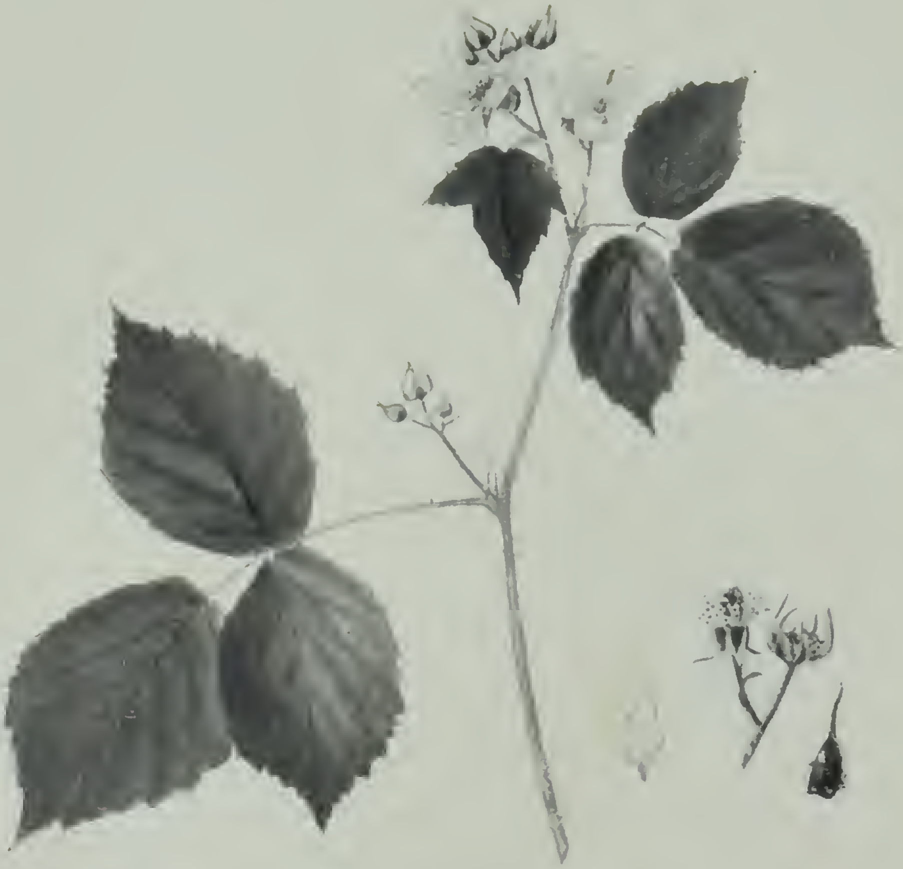
RUBUS CORYLIFOLIUS Sm., var. CONJUNGENS Bab.

BRIT. MUS. (N.H.)
BOTANY



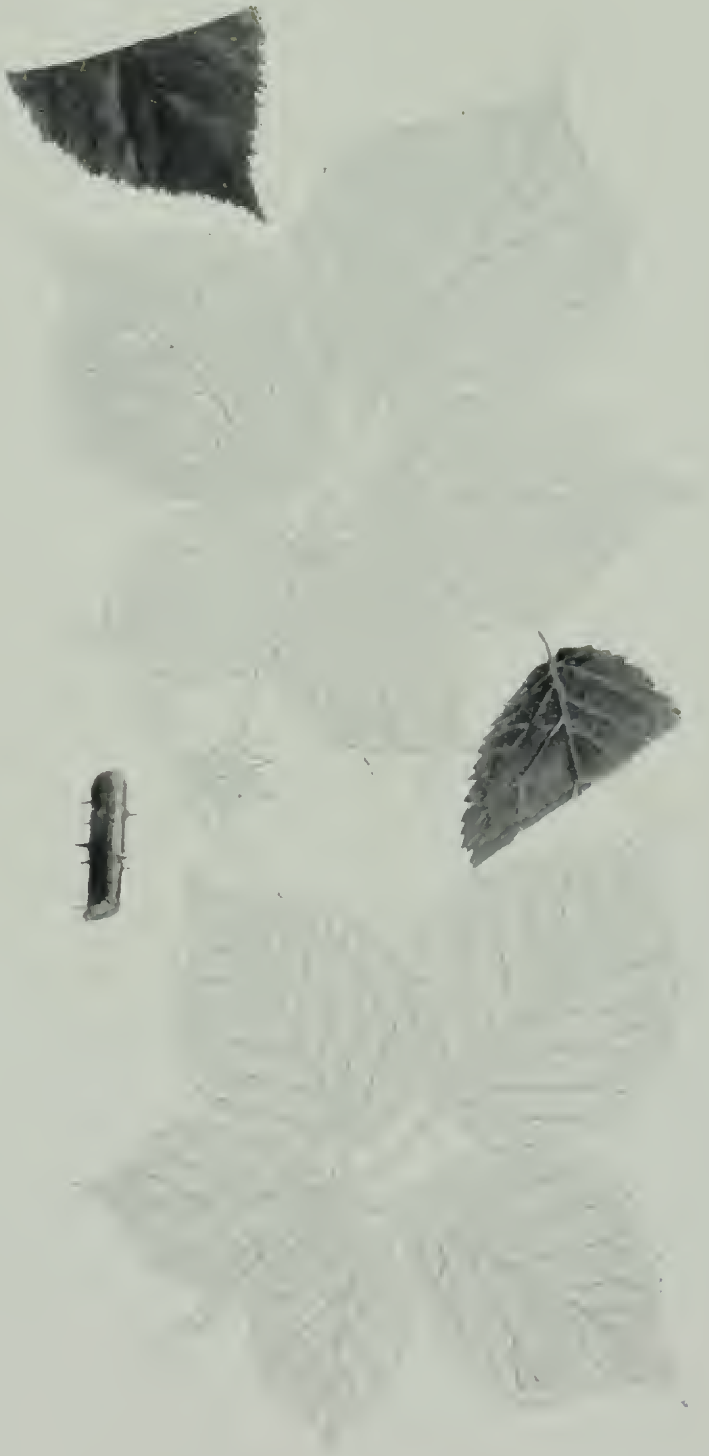
RUBUS BALFOURIANUS Blox.

BRIT. MUS. (N.H.)
BOTANY



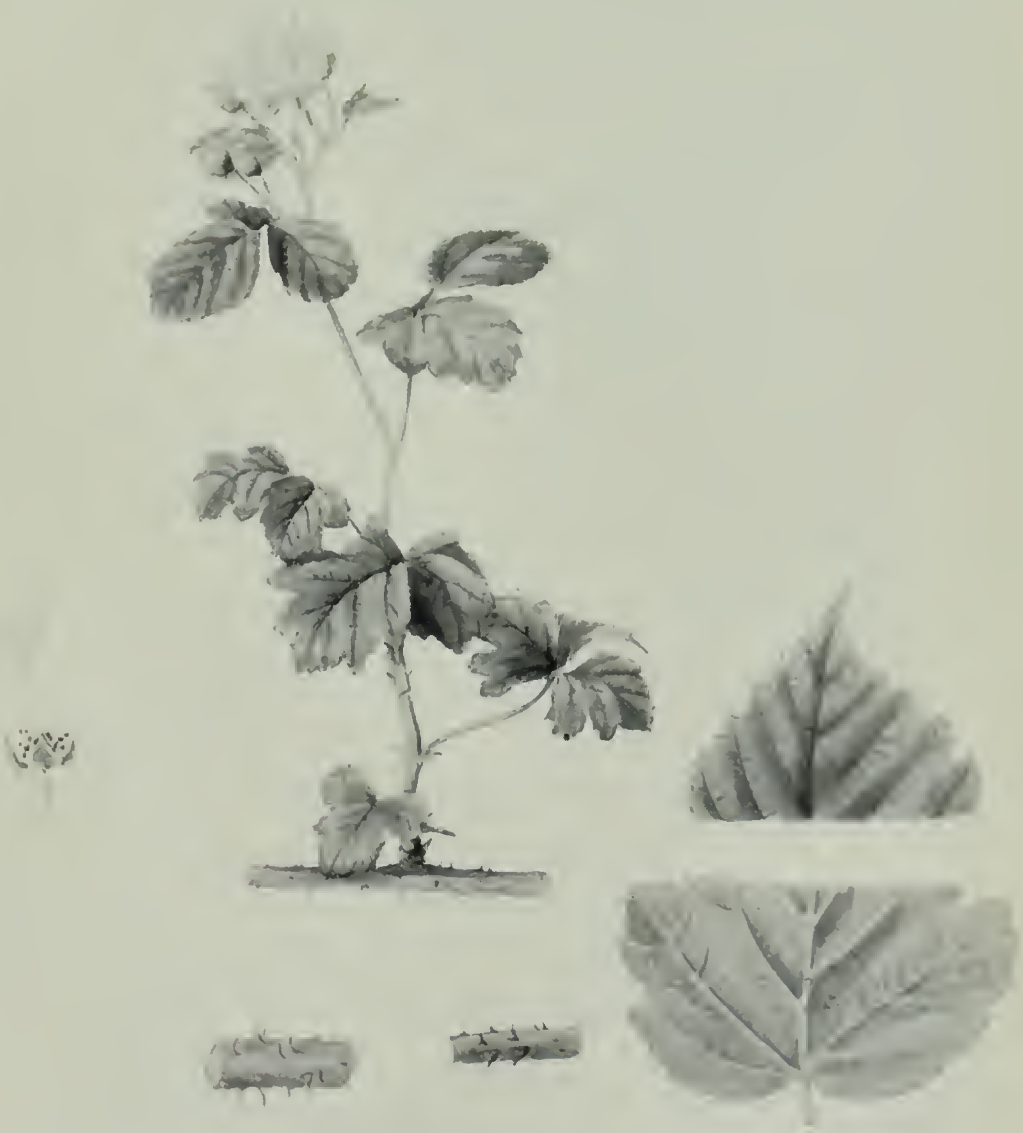
RUBUS CAESIUS L.

BRIT. MUS. (N.H.)
BOTANY



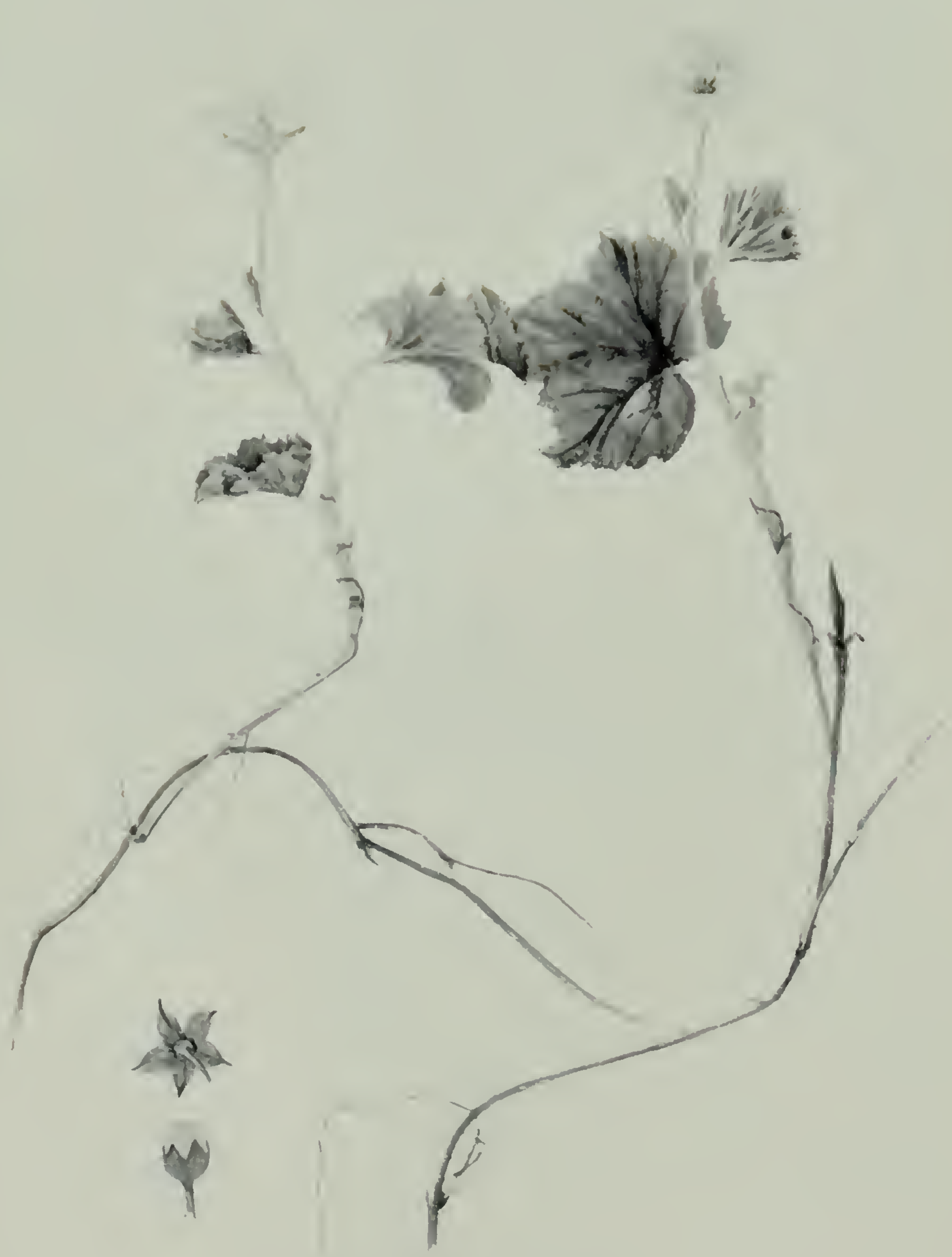
RUBUS CAESIUS L.

BRIT. MUS. (N.H.)
BOTANY



RUBUS CAESIUS L.

BRIT. MUS. (N.H.) BOTANY



RUBUS CHAMAEMORUS L.

BRIT. MUS. (N.H.)
BOTANY

NOTES ON THE SECOND EDITION OF THE "BRITISH PLANT LIST."

With special reference to the Hybrid Names and New Combinations.

G. Claridge Druce.

p. 1, n. 2/3. Thalictrum dunense Dum. It is somewhat doubtful whether our dunal plant is identical with that of Dumortier. Its synonyms, *T. marinum* and *T. minus* var. *maritimum*, should be inserted.

p. 2, n. 6/5 e. Surely Ranunculus Aleae may be omitted.

p. 2, n. 6/7. Insert ×R. levenensis Dr. = R. Flammula × reptans. Named from Loch Leven.

p. 2, n. 6/22 e. R. radians Revel now has specific rank.

p. 2, n. 6/25. ×R. Grovesiana Dr. = R. peltatus × trichophyllus.

p. 2, n. 6/28. ×R. Grovesii Dr. Brit. Pl. List, Ed. i. = R. Baudotii × Drouetii. Both named after James Groves, the joint editor of Ed. ix. of Babington's "Manual."

p. 4, n. 21/2. Papaver Rhoeas L., var. Wilksii, is the Shirley Poppy.

p. 8, n. 45/6. Cochlearia scotica Dr., new name =C. groenlandica E. S. Marshall, evidently not of Linnaeus.

p. 8, n. 49/21. Sisymbrium pulchellimum (Muschl., as Descurainea) Dr., comb. nov.

p. 9, n. 54/20. Brassica gallica (Willd. Enum. Hort. Berol. ii., 678, 1809, et Herb., as Sisymbrium) Dr. = Erucastrum Pollichii Sch. & Spenn.

p. 13, n. 88/2. ×Viola Gregoriae Dr. = V. montana × persicifolia. Hunts. Named after Mrs E. S. Gregory, the author of "British Violets." See *Rep. B.E.C.*, 865, 1925.

p. 13, n. 88/4. ×Viola Leesii Dr. = V. Riviniana × rupestris. After F. A. Lees, the author of the "Flora of N.W. Yorks."

p. 13, n. 88/6. ×Viola Fryeri = V. canina × montana. After Alfred Fryer, author of "The Potamogetons of the British Isles."

×Viola Berkleyi = V. canina × Riviniana. After Rev. M. J. Berkeley, the Fungologist.

×Viola Heslopii = V. canina × rupestris. After J. W. Heslop-Harrison, F.R.S., the worker at the Durham Flora.

×Viola Stagninoides = V. canina × persicifolia.

p. 14, n. 88/7. ×Viola Curnowii = V. lactea × Riviniana. After W. Curnow, the worker at the Cornish Flora.

p 15, n 96/2. ×Silene intermedia = S. angustifolia S. & T., vel vulgaris × maritima With. A hybrid found here and there in Britain.

p. 16, n. 98/4. ×Lychnis Troweriae = L. dioica × Preslii. After Miss Alice Trower who discovered *Preslii* in Britain at Tantallon.

p. 16, n. 100/4. ×Cerastium Richardsonii = C. nigrescens × vulgatum. After Dr Richardson of Bierley, Yorks. See *Rep. B.E.C.*, 498, 1910.

p. 18, n. 103/9. Var. glabra has no claims to belong to *Reuteri*.

p. 19, n. 105/4. Soleirole's trivial, Bocconei, precedes the athenienesis of Ascherson and the campestris of Willkomm and Lange.

p. 19, n. 112/14. ×Hypericum Dubioides Dr. = H. perforatum × quadrangulum. A rare hybrid.

p. 20, n. 112/15. ×Hypericum caesariense Dr. = H. humifusum × linearifolium. After Jersey, where it is found growing with the parents.

p. 21, n. 124/1. Radiola Radiola (L., as Linum) Dr. = R. Linoides of Roth.

p. 21, n. 125/1. The identity of Linum bienne Miller with angustifolium Huds. is doubted, therefore Hudson's name is retained.

p. 21, n. 127/3. Geranium sylvaticum L., var. Wanneri Briq., is not identical with the British species with pale rose-coloured flowers for which var. roseum Dr. is suggested.

p. 22, n. 133/4. Impatiens glandulifera, var. c. candida, is a mere colour form and does not breed true. It should be omitted.

p. 23, n. 140/3. Vitis Thunbergii (S. & Z., as Ampelopsis) Dr., comb. nov.

p. 24, n. 149/1. ×Ulex Donieae Dr. = U. europaeus×Gallii. After Lady Donie, who was with me when it was gathered in the Isle of Wight.

p. 27, n. 160/8. ×Lotus Davyae Dr. = L. angustissimus × hispidus. After its discoverer, Lady Davy. See *Rep. B.E.C.*, 194, 1915.

p. 30, n. 185/10. Rubus subintegribasis Dr. in Brit. Pl. List = integribasis Rogers, not of P. J. Muell. With var. subopacus (Sudre) Dr., comb. nov.

p. 32, n. 185/62. Rubus Subinermoides Dr. = R. subinermis Rogers, not of Muell. & Lefèv.

p. 35, n. 189/5. ×Potentilla Cryeri = P. Crantzii × verna. After J. Cryer, who found it with me in Yorkshire. See *Rep. B.E.C.*, 256, 1907.

p. 38, n. 194/10. ×Rosa Chasei Dr. = R. canina × rugosa. After Capt. C. Chase, of Belfast, its discoverer.

p. 39, n. 194/15. Rosa Eglanteria, var. e. Corstorphinae Dr. After Mrs R. H. Corstorphine, who was with me when it was found. See *Rep. B.E.C.*, 195, 1915.

p. 40, n. 194/18. Rosa tomentella, var. h. Rothschildii Dr. After the Hon. N. C. Rothschild, on whose estate it grows. See *Rep. B.E.C.*, 157, 1912.

p. 42, n. 199/10. ×Saxifraga Farreri = S. hypnoides × tridactylites. After Reginald Farrer, who found it on Ingleborough. See *Rep. B.E.C.*, 256, 1907.

p. 43, n. 199 under 30. ×S. Andrewsii Harvey may be deleted. It is not unlikely that seedling *Jasione* was mistaken for it.

p. 43, n. 210/1. COTYLEDON UMBILICUS-VENERIS L., var. b. BRACTEATA Dr. It differs from the type in being strongly bracteate; doubtless it was the *C. lutea* of some British authors. See *Rep. B.E.C.*, 22, 1920.

p. 43, n. 211/1. SEDUM TELEPHIUM L. This yellow-flowered Linnean plant is not British; our plant is *S. purpureum* Link.

p. 46, n. 225/2. There seems good reason to keep CIRCAEA CANADENSIS Hill (INTERMEDIA Ehrh.) as a distinct species. It is said to occur in areas where the two putative parents do not occur.

p. 48, n. 247/6. APIUM MOOREI (Syme) Dr. This name was established in the *Northamptonshire Natural History Society Journ.*, 129, 1912.

p. 49, n. 255/2. There is no authentic record of PIMPINELLA SAXIFRAGA, var. NIGRA Mill., occurring in Britain. Probably var. *ovata* Sprengel was mistaken for it.

p. 52, n. 296/2. ×GALIUM HILLARDIAE = G. MOLLUGO × VERUM, var. MARITIMUM. Named after Miss Hillard, a diligent worker at the flora of Hayling Isle, where it abounds. See *Rep. B.E.C.*, 32, 1917.

p. 52, n. 296/3. ×GALIUM ROTHSCHILDII Dr. = G. ERECTUM × VERUM. After the Hon. N. C. Rothschild, on whose estate at Wood Walton I discovered it.

p. 52, n. 296/8. GALIUM CONSTRICTUM Chaub. is said to be an older name than *G. debile*.

p. 58, n. 353/1. ×BIDENS PEACOCKII Dr. = B. CERNUA × TRIPARTITA. After the Rev. Adrian Woodruffe-Peacock, who recorded it from Northants. See *Rep. B.E.C.*, 33, 1917.

p. 61, n. 383/3. ×SENECIO OSTENFELDII Dr. = S. AQUATICUS × JACOBAEA. After Professor C. H. Ostenfeld, its discoverer in the New Forest. See *Rep. B.E.C.*, 17, 1914.

p. 61, n. 383/7. ×SENECIO BAXTERII Dr. = S. SQUALIDUS × VULGARIS. After Mr Baxter, the Curator of the Oxford Botanic Garden. See *Fl. Oxf.*, 449, 1886, and *Rep. B.E.C.*, 374, 1892.

p. 63, n. 396/4. ×CIRSIUM FRASERIANUM Dr. = C. ACAULE × TUBEROSUM. After John Fraser of Kew, a diligent worker at the British Flora.

p. 63, n. 396/8. ×CIRSIUM MIXTUM Dr. = C. ARVENSE × PALUSTRE. See *Rep. B.E.C.*, 191, 1923.

p. 64, n. 405/11. ×CENTAUREA CANTIANA Britton = C. NEMORALIS × SCABIOSA. See *Rep. B.E.C.*, 772, 1922.

p. 66, n. 419/1. HIERACIUM PILOSELLA (L.) Zahn, var. LATIUSCULUM (Nag. & Pet. as sp.) Dr., comb. nov.

Var. SUBVIRESCENS (Nag. & Pet. as sp.). Dr., comb. nov.

Var. TARDANS (Nag. & Pet. as sp.) Dr., comb. nov.

p. 66, n. 419/11. HIERACIUM ANGLICUM Fr., var. HARTII (F. J. H., under CERINTHIFORME) Dr., comb. nov.

p. 66, n. 419/17. HIERACIUM CALEDONICUM H., var. b. NAVERENSE Dr. = H. SHOOLBREDI Zahn, not of F. J. Hanbury or E. S. Marshall.

p. 67, n. 419/32. Hieracium tenellum (Backhouse, as var. of eximium) Dr., comb. nov.

p. 67, n. 419/57. Hieracium Smithii (Baker in Bab. Man., Ed. 2, 255, as var.) = H. decolor (W. R. Lint.), not of Nag. & Pet.

p. 67, n. 419/63. Hieracium repandulare Dr. = H. repandum Ley, as var. of ciliatum, not of Oman.

Var. venosum (Ley, under ciliatum) Dr., comb. nov.

p. 68, n. 419/80. Hieracium Sommerfeltii Lindeb., var. e. Griffithii (F. J. H., as var of clovense) Dr., comb. nov.

p. 68, n. 419/89. Hieracium Sublepistoides (Zahn, as var. of Lepistoides) Dr., comb. nov.

p. 68, n. 419/110. Hieracium sagittatum Lindeb., var. subhirtum (F. J. H., as var. of rivale) Dr., comb. nov.

p. 68, n. 419/113. Hieracium Lintonianum Dr. = H. orithales Lint., not of Nag. & Pet.

p. 69, n. 419/127. Hieracium mutabile (Ley, as var. mutabile of acroleucum, not mutabile of Schultz or Pursh), comb. nov.

p. 69, n. 419/156. Hieracium cordigerum Nörrl., var. comb. nov. b. asymmetricum (Ley, as var. of sylvaticum) Dr., comb. nov.

Var. tricolorans (Zahn) Dr. = tricolor Ley.

Var. subcyaneum (W. R. Lint.) Dr. and crassum (Ley) Dr., comb. nov.

p. 69, n. 419/157. Hieracium subtenue (W. R. Lint., as var. of sylvaticum) Dr., comb. nov.

p. 69, n. 419/172. Hieracium duplicatum Almq., var. Duplicatioides Dr. = (stenophyes W. R. Lint., non Nag. & Pet.).

p. 69, n. 149/174. Hieracium insulare (F. J. H., as var. of caesium) Dr., comb. nov.

p. 70, n. 419/182. Hieracium Amphiboloides Zahn, var. simplex (Ley), comb. nov.

p. 70, n. 419/183. Hieracium cacuminum (Ley, as var. of diaphanum) Dr., comb. nov.

p. 70, n. 419/205. Hieracium Stewartii (F. J. H., as var. of gothicum) Dr., comb. nov.

p. 70, n. 419/225. Hieracium rubefactum (W. R. Lint., as var. of rigidum) Dr., comb. nov.

p. 71, n. 419/234. Hieracium pseudo-auratum (Zahn, as sub-sp.) Dr., comb. nov.

p. 71, n. 419/238. Hieracium pycnotrichum Dahlst., var. amplidentatum (F. J. H., as var. of strictum) Dr., comb. nov.

p. 71, n. 419/245. Hieracium crocatum Fr., var. latifolium (Lindeb. Exsicc. 99, as forma) Dr., comb. nov.

Var. c. hethlandiae (Beeby, as var. of dovrense) Dr., comb. nov.

Var. e. (2) thulense (H.).

p. 71, n. 419/247. Hieracium trichophyton Almq., var. glandulosum (F. J. H., as forma) Dr., comb. nov.

p. 71, n. 419/250. Hieracium dumosum Jord., var. Carionii (Bor., as species) Dr., comb. nov.

p. 71, n. 419/253. Hieracium lugdunense (Rouy Fl. Fr., ix., 387, as var. of virgultorum) Dr., comb. nov.

p. 71, n. 419/255. Hieracium nemorivagum Jord., var. calvatum (F. J. H., as var. of boreale) Dr., comb. nov.

p. 75, n. 439/1. Oxycoccus Oxycoccus (L., as Vaccinium) Dr., ? comb. nov.

p. 76, n. 446/2. ×Erica Williamsii Dr. = E. cinerea × vagans. After F. D. Williams of Cornwall. See *Rep. B.E.C.*, 24, 1911; *Gardeners' Chron.*, December 1911.

p. 76, n. 453/3. ×Pyrola Redgrovensis Dr. = P. minor × secunda. After its finder, H. S. Redgrove. See *Rep. B.E.C.*, 615, 1922.

p. 76, n. 456/1. Hypopitys Hypopitys (L.) Dr., comb. nov. = H. Monotropa Cr.

p. 77, n. 457/1. Limonium Limonium (L., as Statice) Dr., comb. nov. = L. vulgare Mill.

p. 77, n. 457/3. Limonium auriculi-ursifolium Pourr., var. corymbosum (C. E. S., as var. of lychnidifolium) Dr., comb. nov.

p. 77, n. 458/2. Statice pubescens (Sm., as Armeria) Dr., comb. nov.

p. 77, n. 458/3. Statice planifolia (Syme, as var. of Armeria) Dr., comb. nov. See *Rep. B.E.C.*, 203, 1915.

p. 77, n. 460/1. ×Primula Christyi Dr. = P. elatior × veris. After Miller Christy, who wrote on this genus.

p. 78, n. 463/7. Lysimachia terrestris (L.) Dr., comb. nov.

p. 78, n. 478/1. Centaurium Centaurium (L., as Gentiana) Dr., comb. nov.

Var. confertum and var. sublitorale (Wh. & C. E. S., under Erythraea) Dr., comb. nov.

×Wheldonianum Dr. = C. Centaurium × pulchellum. After J. A. Wheldon, the joint author of the "Flora of West Lancs."

×intermedium (Wheldon, sub Erythraea) Dr. = C. Centaurium × vulgare.

p. 79, n. 478/2. Centaurium vulgare Rafn., var. occidentalis (Wh. & C. E. S.), and var. Baileyi (Wh. & C. E. S., as vars. under Erythraea) Dr., comb. nov.

p. 79, n. 478/6. Centaurium Scilloides (L., as Gentiana) Dr., b. portense (Brotéro) Dr., comb. nov. See *Rep. B.E.C.*, 290, 1918.

p. 79, n. 482/1. Nymphoides Nymphoides (L.) Dr. = N. orbiculata Gilib.

p. 79, n. 482/1. (Dupl.) Limnanthemum Nymphoides (L.) Dr. = L. peltatum Gmel. = Villarsia Nymphoides (L.).

p. 80, n. 493/2. Lappula Lappula (L., as Myosotis) Dr., comb. nov. = Lappula echinata = Echinospermum echinatum.

p. 80, n. 493/3. Lappula minima (Lehm.) Dr., L. patula (Lehm.) and L. Szovitsiana (Fisch. & Mey, as species of Echinospermum) Dr., comb. nov.

p. 82, n. 511/2. Volvulus inflatus (Desf., as Convolvulus) Dr., comb. nov.

p. 82, n. 511/3. Volvulus dahuricus (Sims, as Convolvulus) Dr., comb. nov.

p. 83, n. 516/1. Lycopersicon Lycopersicum (L., as Solanum) Dr., comb. nov. = L. esculentum Mill.

p. 84, n. 527/8. × Verbascum oxoniense Dr. = V. nigrum × olympicum. It originated in my Oxford garden from the two parents and has larger flowers than *nigrum*. See *Rep. B.E.C.*, 39, 1917.

p. 84, n. 532/2. × Linaria Dominii Dr. = L. Linaria × purpurea. After Prof. Karl Domin of Prague. See *Rep. B.E.C.*, 168, 1912.

p. 84, n. 532/3. × Linaria cornubiensis Dr. = L. repens × supina. Found at Par, Cornwall. See *Rep. B.E.C.*, 998, 1925.

p. 85, n. 532/26. Cymbalaria Cymbalaria (L., as Antirrhinum) Dr., comb. nov.

p. 85, n. 535/3. × Scrophularia Hurstii Dr. = S. alata × aquatica. After C. P. Hurst who discovered it in Berkshire. See *Rep. B.E.C.*, 204, 1915.

p. 85, n. 535/3. × Scrophularia Towndrowii Dr. = S. alata × Scorodonia. After F. Towndrow who sent it from his Malvern garden. See *Rep. B.E.C.*, 312, 1927.

p. 86, n. 541/1. Digitalis purpurea L., var. monstrosa Dr. This is a common garden plant with the upper flower regular and open. Messrs Sutton have succeeded in breeding it nearly true. It is frequently but wrongly alluded to as a hybrid of *Campanula* and *Digitalis*.

p. 86, n. 543/2. Veronica hybrida L., vars. albiflora and purpurascens Dr. These breed true as does V. Chamaedrys L., var. alba Dr.

p. 87, n. 545/17. Euphrasia Lumbii Dr., vice E. variabilis Druce and Lumb, which is preceded by E. variabilis Kerner.

p. 88, n. 548/7. × Rhinanthus Gardineri Dr. = R. borealis × monticola. After William Gardiner, the author of the "Flora of Forfarshire." See *Rep. B.E.C.*, 205, 1915. Note:—*R. monticola* (Sterneck, as *Alectorolophorus*) Dr., *R. borealis* (Sterneck) Dr., and *R. Drummond-Hayi* (Sternack) Dr., were established by me in *Ann. Scot. Nat. Hist.*, 177, 1901.

p. 89, n. 553/1. × Pinguicula Scullyi Dr. = P. grandiflora × vulgaris. After R. W. Scully, the author of the "Flora of Kerry." See *Rep. B.E.C.*, 301, 1921.

p. 89, n. 558/2. × Mentha Piqueti Dr. = M. alopecuroides × rotundifolia. After J. Piquet, the worker at the Jersey Flora.

p. 90, n. 558/7. × M. Fraseri Dr. = M. aquatica × piperita. After John Fraser, the monographer of the English Mints. See *Rep. B.E.C.*, 315, 1927.

p. 91, n. 562/4. Satureja sylvatica (Bromfield, as a species of Calamintha) Dr., comb. nov.

p. 91, n. 562/5. Satureja ascendens (Jordan, as Calamintha) Dr., ? comb. nov.

p. 91, n. 562/6. Satureja villosa (Boiss. Voy. 497, as Calamintha var.) Dr., comb. nov. = Calamintha baetica Boiss., with some doubt as to the British species being identical with the Spanish.

p. 93, n. 578/1. ×Galeopsis sulfurea Dr. = G. speciosa × Tetrahit. var. bifida. See *Ann. Scot. Nat. Hist.*, 41, 1904.

p. 94, n. 581/5. ×Lamium boreale Dr. = L. moluccellifolium × purpureum. Found in Sutherland. See *Rep. B.E.C.*, 83, 1923.

p. 94, n. 587/2. ×Ajuga hybrida Dr. = A. pyramidalis × reptans. Found in Caithness and Clare, a very interesting plant. See *Rep. B.E.C.*, 207, 1915.

p. 97, n. 600/13. Chenopodium glaucum L., var. Microphylloides Dr. = microphyllum Murr, not of Hook. f.

p. 98, n. 606/3. Atriplex patula L., var. gracilis Dr. in *Rep. B.E.C.*, 43, 1920, a slender, erect plant, perhaps a distinct sub-species of exotic origin. Var. elongata Dr., a tall, ramose plant, probably also a distinct sub-species of adventive origin. Barry, Glamorgan.

p. 98, n. 611/4. ×Salicornia Salisburii Dr. = S. europaea × ramosissima. After Dr E. J. Salisbury, a writer on the genus.

p. 99, n. 611/8. ×Salicornia Marshalli Dr. = S. appressa × disarticulata. After the Rev. E. S. Marshall, joint author of the "Flora of Kent."

p. 99, n. 611/9. ×Salicornia Townsendii = S. disarticulata × gracillima. After F. Townsend, author of the "Flora of Hampshire." See *Rep. B.E.C.*, 125, 1917.

p. 99, n. 611/9. ×S. Bartonii Dr. = S. disarticulata × ramosissima. After W. C. Barton. See *Rep. B.E.C.*, 51, 1917.

p. 99, n. 612/3. Dondia altissima (Pall., as Suaeda) Dr., comb. nov.

p. 100, n. 615/16. ×Polygonum Lindmanii Dr. = P. aequale × calcatum. After Dr C. Lindman, who founded *P. calcatum* and *aequale*. See *Rep. B.E.C.*, 179, 1912.

p. 100, n. 618/2. ×Rumex Arnottii Dr. = R. longifolius × obtusifolius. After Dr. Walker Arnott, joint author of the "Flora Scotica," who recorded ×*R. conspersus*. Probably this hybrid was meant.

p. 101, n. 618/4. ×Rumex Brittonii Dr. = R. elongatus × obtusifolius. After C. E. Britton, its discoverer. See *Rep. B.E.C.*, 30, 1911.

p. 101, n. 618/9. ×Rumex varians Dr. = R. conglomeratus × viridis. An occasional hybrid in England. See *Camb. Fl.* ii., 146, 1914.

p. 101, n. 618/11. ×Rumex Warrenii Dr. = R. pulcher × viridis. After Lord de Tabley, the author of the "Flora of Cheshire." See *Rep. B.E.C.*, 34, 1872-4.

p. 102, n. 628/8. ×Euphorbia Turneri Dr. = E. Amygdaloides × pilosa. After William Turner, Dean of Wells, author of the "Names of Herbs," etc. See *Rep. B.E.C.*, 428, 1916.

p. 102, n. 628/12. ×Euphorbia dunensis Dr. = E. Paralias × portlandica.

p. 103, n. 633/4. Ulmus Plotii Dr. = U. sativa Moss non Mill. = U. minor Henry non Mill. = U. Lockii Dr., nomen. See *Rep. B.E.C.*, 30, 1911; *Journ. Northants Nat. Hist. Soc.*, 88, 1911; *Gard. Chron.*, December 9, 1911. After Dr Plot, author of "Nat. Hist. of Oxford," where he describes it in 1677 as *Ulmus folio angusto glabro*.

p. 104, n. 643/1. Alnus Alnus (L.), var. macrocarpa (Req.) Dr. and var. microcarpa (Uechtr.) Dr., comb. nov. They were described by their authors under *A. glutinosa*.

p 105, n. 650/8. ×Salix scotiana Dr. = S. Caprea × Myrsinites. Recorded from Glen Fiagh in Angus.

p. 105, n. 650/9. ×Salix angusensis Dr. = S. aurita × Myrsinites. Found in Angus (hence the name) and Perthshire.

p. 105, n. 650/12. ×Salix breadalbensis Dr. = S. Andersoniana × Arbuscula. Found on the Breadalbanes in Perth, hence the name.

p. 105, n. 650/12. ×Salix Arbusculoides = S. Andersoniana × Arbuscula × phylicifolia. This triple hybrid is recorded by J. Fraser.

p. 105, n. 650/12. ×Salix Forbesiana Dr. = S. Andersoniana × aurita × cinerea = S. Waldsteiniana Forbes (not of Willdenow). After John Forbes, the author of "Salictum Woburnense," 1829.

p 105, n. 650/12. ×Salix Whitei Dr. = S. Andersoniana × aurita × Myrsinites. After F. Buchanan White, a monographer of the genus. It is a rare triple hybrid found in Perth.

p 105, n. 650/12. ×Salix Phylicioides Dr. = S. Andersoniana × Caprea × phylicifolia. Another rare triple hybrid found in two vice-counties.

p. 106, n. 650/12. ×Salix Cinerioides Dr. = S. Andersoniana × cinerea × phylicifolia. A triple hybrid recorded for five North Britain vice-counties.

p. 106, n. 650/12. ×Salix Myrsinitoides Dr. = S. Andersoniana × Myrsinites × phylicifolia. Recorded from three Scottish vice-counties.

p 106, n. 650/12. ×Salix Fraserii Dr. = S. Andersoniana × phylicifolia. See *Rep. B.E.C.*, 986, 1925. A not uncommon hybrid named after the well-known salicologist.

p. 106, n. 650/14. ×Salix perthensis Dr. = S. Arbuscula × Myrsinites. It is the *serta* of F. B. White, which is ante-dated by Willdenow, hence a new name is needed for which I suggest × *perthensis*.

p. 106, n. 650/15. ×Salix superata F. B. White = S. lanata × reticulata.

p. 106, n. 650/18. ×Salix onychiophylla And. = S. herbacea × reticulata. Perth and Angus.

p 107, n. 651/4. ×Populus cantabridgensis Dr. = P. italica × nigra. Recorded from Cambridge as a planted tree. See *Camb. Fl.* ii., 10, 1914.

p. 108, n. 661/1. CORALLORRHIZA CORALLORRHIZA (L., as OPHRIS) Karst. Deuts. Fl., 448, 1880-3.

p. 108, n. 664/3. SPIRANTHES ROMANZOFFIANA Cham., var. STRICTA (Rydberg, as a species) Dr., comb. nov. This is the North Irish plant. The Cork and Kerry plant is now referred to *S. gemmipara*.

p. 108, n. 666/1. EPIPOGIUM EPIPOGIUM (L., as SATYRIUM) Dr., comb. nov. = E. APHYLLUM Sw.

p. 108, n. 667/2. CEPHALANTHERA DAMASONIUM (Miller, as SERAPIAS) Dr. See *Ann. Scot. Nat. Hist.*, 226, 1906.

p. 108, n. 668/2. HELLEBORINE HELLEBORINE (L., as SERAPIAS HELLEBORINE p.p.) Dr., comb. nov.

p. 108, n. 668/2. × HELLEBORINE CROWTHERI Dr. = H. HELLEBORINE × ATROPURPUREA. After its finder, Mr Crowther of Grassington. See *Naturalist*, 128, 1909.

p. 109, n. 669/7. ORCHIS INCARNATA × PRAETERMISSA. See *Rep. B.E.C.*, 212, 1915; 400, 1918; 576, 608, 1919; 137, 1923; 296, 419, 1927.

O. INCARNATA × MACULATA. See *Rep. B.E.C.*, t. 17, 1917; *Journ. Bot.*, 186, 1902.

p. 109, n. 669/10. × ORCHIS HALLII Dr. = O. MACULATA × PRAETERMISSA. After P. M. Hall, a worker at the British palmate Orchids. See *Rep. B.E.C.*, 24, 1914.

p. 109, n. 669/10. × ORCHIS SCOTICA Dr. = O. MACULATA × PRAETERMISSA, var PULCHELLA. Not rare in Scotland. See *Rep. B.E.C.*, 578, 1919.

p. 109, n. 669/11. × ORCHIS CURTISIANA Dr. = O. FUCHSII × INCARNATA. After Wm. Curtis, author of the "Flora Londinensis." See *Rep. B.E.C.*, 107, 1914.

p. 109, n. 669/11. × ORCHIS TRANSIENS Dr. = O. FUCHSII × MACULATA. See *Rep. B.E.C.*, 213, 1915.

p. 109, n. 669/11. × O. MORTONII Dr. = O. FUCHSII × PRAETERMISSA. After J. Morton, author of the "Natural History of Northamptonshire." See *Rep. B.E.C.*, 106, 1914; t. 18, 1917.

p. 109, n. 669/11. × ORCHIS HIBERNICA Dr. = O. FUCHSII × HABENARIA GYMNADENIA. See *Rep. B.E.C.*, 53, 1917. Good specimens were sent from Fermoy, Cork. Found in several British counties.

p. 109, n. 674/1. × HABENARIA EVANSII Dr. = HABENARIA GYMNADENIA × O. MACULATA. After Dr A. H. Evans of Cambridge. See *Rep. B.E.C.*, 199, 1906.

p. 109, n. 674/1. × HABENARIA QUIRKIANA = HABENARIA GYMNADENIA × O. PRAETERMISSA. See *Rep. B.E.C.*, 26, 1914. From Winchester, where it was found on the chalk down. See *Winchester Coll. N. H. Rep.*, 102, 1911. The Rev. R. Quirk had previously named it *H. Wintoni* (*Rep. B.E.C.*, 33, 1911), a hybrid as he thought of *latifolia*, a plant I do not understand. I therefore suggest *Quirkiana* to replace *Wintoni*.

p. 110, n. 674/1. For × HABENARIA ANACAMPTOIDES = HABENARIA GYMNADENIA × O. PYRAMIDALIS read ANACAMPTIS (Wilms., 1868) Dr., comb. nov. From the section *Anacamptis* of *Orchis* to which *pyramidalis* belongs. See *Rep. B.E.C.*, 26, 1914.

p. 110, n. 674/4. ×Habenaria Vaughanii Dr. = Habenaria (Coeloglossum) viridis × Orchis incarnata. After Canon Vaughan of Winchester.

p. 110, n. 674/4. ×Habenaria mixta (Asch. & Graebn.) Dr., comb. nov. = Habenaria (Coeloglossum) viridis × Orchis Fuchsii. See *Rep. B.E.C.*, tt. 15 and 16, 1917.

p. 110, n. 674/4. ×Habenaria Websteri Dr. = Habenaria (Coeloglossum) viridis × O. maculata. After A. D. Webster, the author of "British Orchids." See *Rep. B.E.C.*, 214, 1915.

p. 110, n. 674/6. Habenaria virescens (Zollik. 1829, as Orchis) Dr., vice Habenaria chloroleuca H. Ridley and Habenaria chlorantha Bab., 1837, non Sprengel, 1829.

p. 110, n. 674/7. ×Habenaria hybrida Dr. = Habenaria bifolia × virescens. Skye, very rare. See *Rep. B.E.C.*, 508, 1910.

p. 110, n. 674/7. Habenaria Chevallieriana (Camus under Platanthera) Dr., ? comb. nov.

p. 111, n. 691/3. Polygonatum Polygonatum (L., as Convallaria) Dr., ? comb. nov.

p. 113, n. 718/1. Juncus spinosus Forsk., var. atlanticus (J. W. White, as a var. of J. maritimus) Dr., and var., comb. nov.

p. 113, n. 718/9. ×Juncus Surrejana Dr. = J. acutiflorus × articulatus (lamprocarpus). See *Rep. B.E.C.*, 96, 1883. Agreed to by Buchenau. It was found in Surrey.

p. 114, n. 718/14. ×Juncus transiens Dr. = J. compressus × Gerardi.

p. 115, n. 722/4. The vars. zosterifolium (Neum.), microcephalum (Neum.), and diminutum (Neum.) were described under S. affine and are new combinations under Sparganium angustifolium.

p. 115, n. 722/4. ×Sparganium zetlandicum Dr. = S. angustifolium × simplex. Found in Zetland. See Dr. *Fl. Zetl.* in *Rep. B.E.C.*, 526, 1922.

p. 115, n. 729/1. ×Alisma Gluckii Dr. = A. Plantago-aquatica L. × Echinodorus Ranunculoides Engel. After Hugo Glück, who discovered it in Ireland. See *Rep. B.E.C.*, 343, 1913.

p. 116, n. 733/1. Damasonium Damasonium (L., as Alisma) Dr. in *Fl. Berks.* 513, 1897.

p. 116, n. 737/2. The vars. amphibius (Fr.), cancellatus (Fryer), and lancifolius (Cham. & Schlecht.) were made under P. polygonifolius, and are new combinations under P. oblongus Viv.

p. 116, n. 737/5. Potamogeton alpinus Balb., var. d. Palmeri Dr. Brit. Pl. List, ed. ii., 73, 1908 = P. alpinus × ? praelongus. After Miss C. E. Palmer, who found it with me in Hampshire. Arthur Bennett agreed to this.

p. 118, n. 740/1. ×Zostera Hagstromii Dr. = Z. marina × nana. See *Rep. B.E.C.*, 684, 1919. After Dr J. O. Hagström, a monographer of the Pondweeds.

p. 119, n. 746/4. ×Scirpus arunensis Dr. = S. Tabernaemontani × triqueter. From the river Arun in Sussex, where it is plentiful with both parents. *S. carinatus*, to which it has been previously referred, is a hybrid of *lacustris* and *triqueter*. See *Rep. B.E.C.*, 68, 1923.

p. 120, n. 753/3. ×Carex subgracilis Dr. = C. acutiformis × gracilis. See *Rep. B.E.C.*, 215, 1915.

p. 120, n. 753/7. ×Carex involuta (Bab., as var. of vesicaria) Dr., comb. nov. = ? C. inflata × vesicaria. Cheshire. See Syme *E.B.* x., 170, and *Rep. B.E.C.*, 9, 1863.

p. 120, n. 753/15. ×Carex Corstorphinei Dr. = C. binervis × flava, var. oedocarpa. After R. H. Corstorphine, who was with me when it was found in Glen Phee, Angus. See *Rep. B.E.C.*, 216, 1915.

p. 122, n. 753/45. ×Carex Curtisii Dr. = C. elata × gracilis (C. acuta × stricta). After Wm. Curtis, the author of the "Flora Londinensis."

p. 124, n. 762/2. Eleusine aegyptia (L., as Cynosurus) Pers. Syn. i., 87, 1805. = Dactyloctenium aegyptium (Willd.) Richt.

p. 124, n. 763/1. Sorghum Sorghum (L., as Holcus) Dr., comb. nov.

p. 126, n. 780/2. ×Agrostis densissima (Hack.) Dr., comb. nov. = A. alba × verticillata. See *Rep. B.E.C.*, 343, 1913.

p. 127, n. 783/2. Calamagrostis Calamagrostis (L., as Arundo) Dr., comb. nov.

p. 128, n. 795/2. Arrhenatherum tuberosum (Gilib., as Avena) Dr., comb. nov. See *Rep. B.E.C.*, 29, 1914.

p 129, n. 802/1. Phragmites Phragmites (L., as Arundo) Dr., comb. nov.

p. 130, n. 815/2. Eragrostis Eragrostis L., as Poa) Dr., comb. nov. = E. minor Host.

p. 131, n. 825/4. ×Glyceria salina Dr. = G. distans × maritima. See *Rep. B.E.C.*, 61, 1917.

p. 132, n. 825/7. ×Glyceria Burdoni Dr. = G. Borreri × maritima. After Prebendary R. J. Burdon, who was with me when it was found in Sussex. See *Rep. B.E.C.*, 61, 1917.

p. 134, n. 830/1. ×Agropyron Hackelii Dr. in *Rep. B.E.C.*, 252, 1906. =A. junceum × repens. After Prof. Hackel, the authority on grasses. See also *Rep. B.E.C.*, 578, 1897; 99, 1903; 139, 1904; 252, 1906.

p 134, n. 830/2. ×Agropyron Oliverii Dr. in *Rep. B.E.C.*, 38, 1911. = A. pungens × repens. After Prof. F. Oliver.

p. 138, n. 856/4. ×Dryopteris ambigua Dr = D. aristata × spinulosa.

p. 138, n. 856/10. Dryopteris Dryopteris (L., as Polypodium) Dr., comb. nov.

p. 138, n. 857/4. The vars. dentata (Hook.), cynapifolia Koch, anthriscifolia Koch, and sempervirens (Moore) were described under C. fragilis, and are new combinations under Cystopteris Filix-fragilis.

Some earlier authorities for the combinations than these cited will probably be found.

BRITISH PLANT LIST

(EDITION II.).

G. CLARIDGE DRUCE.

ADDITIONS AND CORRECTIONS.

p. vii., line 28.	After "employed" insert "When no number follows a native species, it is assumed that it occurs in all the vice-counties."
p. xi., line 32.	After Riddelsdell insert "for critical help."
p. xiii., line 1.	Delete *O. cruenta*.
p. xvi., line 17.	For *brevidens* read *brevifolia*.
p. xvi., line 37.	For *hibernica* read *hyberna*.
p. xvi., line 47.	For *vulgatum* read *vulgata*.
p. xvii., line 14.	For *calaminaria* read *calaminare*.
p. xli., line 13.	For "hactare" read "hectare."
p. 1. n. 6/2.	Add e. PROSTRATUS Gaud. (reptabundus Jord.). f. VILLOSUS Lamotte.
p. 2. n. 6/7.	Add to e. (? ALISMIFOLIUS Glaeb.). Add × REPTANS = LEVENENSIS Dr.
p. 2. n. 6.	Add 16 (2) *monspeliensis* L. S. Eur.
p. 4, n. 21/2.	Add ? × LECOQII.
p. 5, n. 30.	The date of *Dicentra* is 1833 not 1883.
p. 6, n. 35/2.	(Dupl.) For "DC." read "Br."
p. 8, n. 45/6.	For GROENLANDICA L. read SCOTICA Dr. The British plant is not *groenlandica*.
p. 8, n. 48/2	and Dupl. For Chia read chia.
p. 9, n. 54/6.	For CHIERANTHOS read CHEIRANTHOS.
p. 10, n. 59.	Add 15 (2) LAEVIGATA (E. At.). Add 28 (2) RUBELLA (E. At.).
p. 10, n. 60.	For "Mill. Abr. 1754" read "Zinn Cat. Pl. Goett. 1757 (non Mill.)."
p. 10, n. 61/3.	For *virescens* read *viridescens*.
p. 11, n. 61/9.	*Iberis* is not distinct from 61/1. *graminifolium*.
p. 11, n. 61/21.	Put ? to *apetalum* Willd.
p. 11, n. 61/39.	b. *glabripes* Thell. belongs to *peregrinum* Thell.
p. 11, n. 61/39.	Add b. *gracilescens* Thell.
p. 12, n. 76/3.	Add b. *eriocarpum* Webb & Berth.
p. 13,	Add 86/2. *CAYLUSEA* A. St. Hil. Resedac. 29, 1837. 1 *canescens* A. St. Hil. N. Africa.
p. 13, n. 88.	Add 3 (2) ARENICOLOR Chab. Lincs, Bucks.
p. 13, n. 88/6.	For × STAGNINA read × PERSICIFOLIA.
p. 14, n. 88.	Add 13 (2) *declinata* W. & K. Hungary.
p. 14, n. 88/23.	Add b. SUBINCISA (Jord.).
p. 15, n. 89/1 e.	For MAJOR read MAJUS.
p. 15, n. 93.	Add 2 (2) *Saxifraga* Scop. It is only a garden escape.

p. 15, n. 96/2. Add f. VESICARIA.
p. 16, n. 96/8. Add 19 (2) *trinervia* Seb. & Maur. E. Eur.
p. 17, n. 100/8. Add × VULGATUM = OXONIENSE Dr.
p. 18, n. 104/1. Add PRAECOX as a synonym of NANA Linton.
p. 19, n. 105/5. For "(Cr.)" read (L.).
p. 19, n. 107. Add 2 *grandiflora* Hook. Brazil.
p. 19, n. 112/13. For DESETANGII read DESETANGSII.
p. 20, n. 116. Add 10 *punctata* All. Eur.
p. 21, n. 127/14. Add e. ALBUM. This comes true from seed.
p. 22, n. 128/3. Add g. MICRANTHUM.
p. 22, n. 128/10. For *romanum* read *acaule* (L.) B. & T.
p. 22, n. 132. Add 10 *incarnata* L. S. Afr. Guernsey.
Add 11 *tetraphylla* Cav. Mexico.
p. 23, n. 136/1. Add c. LUTESCENS Dr. Hib.
p. 23, n. 145. Add 1 (2) *arboreus* L. Freshfield, Lancs.
p. 24, n. 151/3. Add d. PARVIFOLIA (Rienc.) Dr.
p 24, n. 153/1. Add e. *minor* Gaud. (This may cover *tenuifoliolata*.)
f. PUBESCENS.
p. 25, n. 153/4. Add h. *oligocarpa* (Corb.) Rienc.
i. *sardoa* Moris.
p. 25, n. 153/7. Add f. UNGUICULATA (Ser.) Dr.—a teratological form.
g. INTEGRISTIPULA (Rouy) Dr.
p. 25, n. 154/2. Add b. *macrorrhizus* Pers.
p 25, n. 154/4. Add e. *laxiflorus* Rouy.
p. 25, n. 155/1 b. For PEDUNCULATUM read PEDUNCULOSUM Ser.
Add c. BRACHYCALYCINUM Rouy.
p. 26, n. 155/7. Add f. AGRESTINUM Jord.
p. 27, n. 160/5. Add f. SCANDALIOIDES Rienc. Harris. Zetland.
(forma GRANDIFLORUS Dr., p.p.)
p. 28, n. 176/2. Add b. *stenophylla* Boiss.
p. 28, n. 176/9. Add d. VIOLASCENS (Rouy) comb. nov.
p. 29, n. 176/13. Add j. ARENIVAGA (Lamotte).
p. 29, n. 178/2. Add c. OBLONGUS Ser.
p. 29, n. 178/5. Add b. GLABRA Trautv.
p. 29, n. 178/6. Add c. GRACILIS Dr.
p. 29, n. 178/25. Add d. OBTUSIFOLIUS Martr.-Don.
p. 30. n. 183/5. Add × INSITITIA.
pp. 31, 32, 33, 35, n. 185/12, /18, /23, /67, /106, /151, /153. For RUSTICANUS use ULMIFOLIUS, the older name.
pp. 31, 33, 34, 35, n. 185/14, /108, /120, /151. For LEUCOSTACHYS read VESTITUS.
p. 33, n. 185/92. Substitute DISCERPTUS for ECHINATUS; the latter is a nomen confusum.
p. 35, n. 185/149. Delete h. FASCICULATUS.
p. 35, n. 185/158. The older name is *parviflorus* Nuttall.
p. 37, n. 193/5. For *canadensis* read *canadense*.
p. 39. n. 194/12. Add m. AFZELIANA Fr.
n. PSEUDO-HABERIANA R. Keller.

p. 40, n. 194/19. Add l. CUSPIDATOIDES Crép.
p. 42, n. 198. Add 4 *vulgaris* Moench. Eur.
p. 42, n. 199/20. Add ? b. MINUTA Poll.
p. 46, n. 223/2. It has been asserted that *Lamarkiana* De Vries is not identical with *grandiflora* Ait.
p. 47, n. 236. For "Thunb. Japan." read "Murr. Austral."
p. 48, n. 247/5 b. Enclose Fries in brackets; he described it as a species.
p. 49, n. 255/2. Add f. OVATA Sprengel. Eng. 2.
p. 50, n. 265/6. Add c. MINIMA Rouy & Camus. Hib.
p. 52, n. 296/2. For LITORALE read MARITIMUM.
p. 54, n. 310/1 b. For SUBINTEGER read SUBINTEGRUM.
p. 58, n. 364. Add 7 *medians* Murb. N. Afr.
p. 59, n. 370. Add 19 *carinatum* Schousb. Morocco.
p. 60, n. 378/3. Add c. VESTITA Corb. (CANESCENS Rouy).
p. 63, Add 401/2. *discolor* DC. Eur.
p. 64, n. 405/11. For "Brittonii" read "cantiana C. E. B."
p. 65, n. 416. Add 6 (2) *bulbosa* Tausch. S. & E. Eur.
p. 68, n. 419/112 b. Add after D., 3.
p. 68, n. 419/113. For LINTONIANA read LINTONIANUM Dr.
p. 69, n. 419. Add 140 (2) HOLOPLEURUM Dahlst. Orkney.
p. 71, n. 419/211. Add l. CHLOROMELANUM Dahlst. Donegal.
p. 71, n. 419/245 e. Delete brackets and read e (2) THULENSE H. non D.
p. 71, n. 420/1. For "Tineo" read "Tenore."
p. 71, n. 420. Add 2 *integrifolia* L. S. Eur.
p. 72, n. 422/2 e. For SORDIDA read SORDIDUS.
p. 72, n. 422/3 b. For LASIOLAENA read LASIOLAENUS.
d. For ARENARIA read ARENARIUS.
p. 72, n. 423. For "Weber" read "Zinn Cat. Pl. Hort. Goett. 325, 1757.
p. 72, n. 423. Add 1 (2) ARGUTUM D. Bucks.
p. 72, n. 423. Add 2 (2) HELVICARPUM D. Wilts.
p. 72, n. 423. Add 5 (2) GLAUCINIFORME D. Bucks.
p. 72, n. 423. Add 15 (2) ACRIFOLIUM D. Fetlar.
p. 72, n. 423. Add 15 (3) ACINODONTUM D. Fetlar.
p. 72, n. 423/25. Delete LAETEFRONS and substitute LANDMARKII D.
p. 72, n. 423. Add 34 (2) STRICTOPHYLLUM D.
b. IMMACULATUM D. Orkney.
p. 73, n. 423. Add 36 (2) ADSIMILE D. Berks.
p. 73, n. 423. Add 36 (3) AEQUATUM D. Berks.
p. 73, n. 423. Add 36 (4) ARDISODON D. Oxon.
p. 73, n. 423. Add 42 (2) ATROMARGINATUM Lindb., probably.
p. 73, n. 423. Add 46 (2) CAPHOCENTRUM D. Eng. 3.
p. 73, n. 423. Add 54 (2) DUPLIDENTIFRONS D. Orkney.
p. 73, n. 423. Add 63 (2) HAMIFERUM D. Berks.
p. 73, n. 423. Add 62 (2) HEMIPOLYODON D. Berks.
p. 73, n. 423. Add 83 (2) SEMIPRIVUM D. Berks.
p. 73, n. 423. Add 83 (3) SILESIANUM D. Eng. 2.
p. 73, n. 423. Add 83 (4) SIMULATUM D. Berks.

p. 73, n. 423.	Add 84 (2) STENACRUM D. Oxon.
p. 73, n. 423.	Add 84 (3) STENOGLOSSUM D. Eng. 2.
p. 73, n. 423.	Add 84 (4) STEPTOLOBUM D. ined. Berks.
p. 73, n. 423.	Add 84 (5) SUBEXPALLIDUM D. Eng. 3.
p. 73, n. 423.	Add 84 (6) SUBLAETICOLOR D. mod.
p. 75, n. 436/6.	Read *L. falcata* Fritsch = *Specularia falcata* R. & L.
p. 75, n. 442.	For PERNETTY read PERNETTYA.
p. 78, n. 468/1.	For d. SERPYLLIFOLIA read b. SERPYLLYFOLIUS.
p. 79, n. 480.	Add 10 *acaulis* L. Eur.
p. 81, n. 497.	Add 8 *brachycalyx* Boiss. Kurdistan.
p. 82, n. 509.	Add 6 *calycinum* Viv. S. Eur. Add 7 *humile* Desf. Syria.
p. 82, n. 511/1 b.	Enclose Lange in brackets.
p. 83, n. 518/10.	For *Franchetti* read *Francheti*.
p. 84, n. 527/5.	Add × NIGRUM.
p. 84, n. 527/8 c.	Delete THAPSIFORME (Schrad.).
p. 84, n. 532/11.	For *italica* Trev. read *angustissima* (Lois.) Borb.
p. 85, n. 532/15.	For *tripartita* read *bipartita*.
p. 86, n. 541/2.	*grandiflora* Miller is older than *ambigua* Murr.
p. 86, n. 543/8.	Add d. DIVARICATA (Krosche) C. E. B. e. AMBIGUA (Krosche) C. E. B. f. ULVACEA Hausm.
p. 86, n. 543/18.	Add d. ASCHERSONIANA (Lehm.).
p. 86, n. 543/19.	Add c. GARKIANA P. Fourn. d. VERSICOLOR Mathieu.
p. 86, n. 543.	Add 23 (2) *austriaca* L. E. Eur.
p. 88, n. 550/1.	Add b. BRACTEOSA Reut.
p. 89, n. 552/5.	Add b. PLATYLOBA Meist.
p. 90, n. 558/6.	Prefix asterisk.
p. 91, n. 558/12.	Add × VERTICILLATA.
p. 91, n. 561/1.	Add × VULGARIS = CITRIODORUS Pers.
p. 91, n. 561/5.	For PYCHNOTRICHUS read PYCNOTRICHUS.
p. 92, n. 566/1.	Add b. MODESTA Briq. c. ROSTRATA Reichb.
p. 93, n. 577/9.	For *salicifolia* read *salvifolia*.
p. 93, n. 578/3.	An older name is SEGETALIS Neck.
p. 93, n. 581/3.	Add c. EXANNULATUM Loret & Berg.
p. 94, n. 585/2.	Transfer *samia* to 584/2, and read *Phlomis samia* L. Greece.
p. 95, n. 588.	Add 19 (2) *exigua* Murr. Medit.
p. 95, n. 592/2.	For *chilensis* read *brasiliense* L. S. Am.
p. 95, n. 592/3.	For *bonariensis* DC. read *argentea* Lam. Eur.
p. 96, n. 596/4.	For "Willd." read "(Willd.) Thell."
p. 96, n. 596/8.	Add b. *maculatus* Thell.
p. 96, n. 600.	Add 1 (2) [CRASSIFOLIUM Hornem.] b. DEGENIANUM Aellen. Kent ?
p. 96, n. 600/7.	For VACHELLIAE read TRIDENTINUM Murr. the older name.

p. 96, n. 600/8.	Add k. (2) PRAEACUTUM Murr. l. (2) MURALIFORMIS Murr. × FICIFOLIUM = ZAHNII Murr. p (bis) MIXTIFRONS Murr. p (ter) DELTOPHYLLUM Murr.
p. 97, n. 600/8.	Add y. OVATUM Aell.
p. 97. n. 600/11.	Add c. *Leptophylloides* (Murr) Thell. & Aell.
p. 97.	Add 18 (2) *triangulare* R. Br. Austral.
p. 97. n. 600/20.	*Strictum* A. W. Roth is older than *striatum* Murr.
p. 97. n. 600/21.	Add e. *multidentatum* Aell. and f. *deminutum* Aell.
p. 97.	Add 21 (2) *pallidicaule* Aell. Hab. ?
p. 97. n. 600/31.	Add b. *gracile* Aell.
p. 97. n. 600.	Add 31 (2) *amaranticolor* Coste & Reyn.
p. 97,	Add 34 (2) *holopterum* Thell. & Aell.
p 97, n. 600/32.	May be ALBUM × ATRIPLICIS.
p. 98,	Add 609 (2) *POLYCNEMON* L. 1 *arvense* L. Eur., etc.
p. 99, n. 615/7.	Add × SCABRUM = DANSERI Dr.
p. 99, n. 615/10.	Add to MITE Sarnia.
p 99, n. 615/12.	For MARITINUM read MARITIMUM.
p 101, n. 618/4.	Delete ? before × OBTUSIFOLIUS.
p. 101, n. 618/6.	Add e. DISCOLOR Wallr.
p. 101. n. 618/11 ×.	For "Haussk." read "Camus."
p. 101, n. 618/16 g.	For HASTATA read HASTATUS.
p 102, n. 628/11.	For *Thellungii* read *Gayeri* Boros et Soó = × *Schroeterii* Thell.
p. 102, n. 633/1.	Add c. NITIDA Syme. A doubtful var. Insert in brackets *Ulmus glandulosa*, *latifolia* and *parvifolia* Lindley. They need verification.
p. 103, n. 637/2 b.	For "Dr." read "Weddell." Add c. INERS (Forsk.). Add d. ELEGANS Dr.
p. 104,	Add 643 (3) *viridis* DC. Eur.
p. 104, n. 650/1.	Add b. LATIFOLIA Anders.
p. 104, n. 650/3.	Add d. STENOPHYLLA Fraser.
p. 109, n. 669/14.	For VILRUSII read VILMSII. Add × HABENARIA GYMNADENIA = O. ROBSONII (Hesl.-Harrison).
p. 109, n. 669.	Add 16 (2) FOLIOSA × MACULATA = O. HEPBURNII Dr. et SCAMPSTONI Dr.
p. 109, n. 674.	FUCHSII × HABENARIA GYMNADENIA is duplicated.
p. 112, n. 697.	*Yucca* may be bracketted.
p. 112, n. 702/16.	Insert as a synonym, under *roseum*, *A. ambiguum* Sm. Add c. *Deseglisei* Martr.-Don.
p. 114, n. 718/11.	ALPINUS is a nomen abortivum; read ALPINO-ARTICULATUS Chaix.
p. 114, n. 719/1.	(Dupl.) For GRACILE read GRACILIS.

p. 114, n. 719/6. (Dupl.) For CAMPESTRE read CAMPESTRIS.

p. 114, n. 719/10. (Dupl.) For NIVEUM read NIVEA.

p. 115, n. 729/1. After GLUCKII Dr. insert Anglesey.

p. 116, n. 737/1. Add e. PYGMAEUS Gaud.
Add the synonym *P. gessnacensis* for the hybrid with *oblongus*.

p. 116, n. 737/2 e. For SPHAGNOPHILA read SPHAGNOPHILUS.

p. 116, n. 737/9. Add as a synonym to GRAMINEUS, HETEROPHYLLUS Schreb.
Add ×PERFOLIATUS = SALIGNUS Fryer. Devon.

p. 117, n. 737/14. Add d. LATIFOLIUS Hagström. Earn.

p. 117. n. 737/16. Add i. RICHARDSONII Ar. Benn.

p. 117, n. 737/17. Add e. PLANIFOLIUS Meyer.

p. 119, n. 746/6. Add Lancashire.

p. 120, n. 753/3 b. Bracket Roth.

p. 120, n. 753/4. Delete c. DICHROA.

p. 120, n. 753/9. SUBLAEVIS Hornem. is the older name.

p. 121, n. 753/20. Add f. ARGILLACEA Towns.

p. 122, n. 753/49. For ×RIGIDA read ×CONCOLOR.

p. 123. n. 754/1 b. For NIGRICANTE read NIGRICANS.

p. 123, n. 754/9. Add "Trimen" after "(Link)."

p. 124. n. 758/2. MARITIMA (Curtis) Fernald is said to retain the older trivial.

p. 124. n. 765/8 and 765/9 are probably synonymous.

p. 125, n. 771. Add 9 *hyalina* Nees. S. Am.

p. 125, n. 772/4. *Urachne* is a synonym.

p. 126, n. 780/9. The older name is *A. hyemalis* B. S. P., based on *Cornucop. hyemale* Walt., 1788.

p. 126, n. 782/2. LUTOSUS (Poiret) Hitchcock is the older name.

p 126. n. 782/3. The older name is *P. puniceus* (L.) Lag.

p. 126, n. 782/5. For *littoralis* read *linearis* Trin.

p. 130, n. 815. Add 7 *curvula* Nees. S. Afr.

p. 130. n. 824/2. Add k. ALPESTRIS Anders.

p. 131, n. 824/6. Add j. EFFUSA A. & G.

p. 131, n. 824/10 b. For LANGEANA read LANGANA.

p. 131, n. 825/2. Add after PEDICILLATA ? = POAEFORMIS Fr.

p. 132, n. 826/3 b. Bracket Hackel.

p. 133. n. 827/12. For *adrensis* read *adoensis*.

p. 133. n. 827. Add 25 (2) *Boisserii* Hochst. & Steud.

p. 134, n. 830/1. Insert "(L.)" before "Beauv."

p 136, n. 841/3 and 841/4 are practically synonymous.

p. 137. n. 850. For "1726" read "1756."

p. 137, n. 851/1 c. For MAJOR read MAJUS.

p. 137. n. 853/1 f. For PRUINOSA read PRUINOSUM.

p. 138, n. 851/7. Insert × before TRICHOMANES.

p. 138. n. 856/5. For FEENISCHI read FENISECII.

PERSONALIA AND VARIOUS NOTES.

MR F. J. HANBURY, Brockhurst, East Grinstead, is anxious to have seeds of rare British plants. He will defray expenses.

SIR ARTHUR CHURCHMAN, M.P., has purchased Orford Castle and about 8 acres for presentation to the Orford Town Trust.

MR H. BRITTEN, 42 Millfield Road, York, is preparing a Flora of Cumberland, and would be glad of any records or notes.

THE REV. W. KEBLE MARTIN, Coffinswell Rectory, Newton Abbot, is painting British Plants and would be glad if members would send him fresh specimens.

MR A. E. WADE, Botanical Department, the University of Cardiff, is contemplating the preparation of a Flora of Monmouthshire, and would be glad of assistance.

MR C. BENNION has presented to Leicester the historic house, Bradgate Park and estate of about 900 acres. Lady Jane Grey was born in the house which is now in ruins.

MRS ISABEL ADAMS, F.L.S., is painting British Aquatics. Members wishing to help in collecting specimens are asked to communicate with her at 14 Vernon Road, Edgbaston.

MR J. E. LITTLE contributed to the *Herts Express* in November 1927 some articles describing the Plants found on Dumps and Waste Ground. Among them was *Verbascum Phlomoides*.

MRS PERRIN, 23 Holland Villas Road, London, W.14, is continuing her beautiful paintings of British plants. Members willing to assist in collecting specimens are asked to write to the above address.

DR A. W. HILL, Director of the Royal Botanic Gardens, Kew, has been visiting Australia, New Zealand and Java. The Director contributed to *The Times* a couple of columns describing his experiences.

MR J. GORDON DALGLEISH, F.L.S., is preparing a Flora of Sussex. He would be glad of any Sussex records and notes, and we hope also that members will send in their names as subscribers. His address is 50 Tisbury Road, Hove, Sussex.

MR T. A. DYMES, F.L.S., 23 Norton Road, Letchworth, wants ripe capsules of British Orchids, especially *Malaxis*, *Corallorrhiza*, *Cephalanthera longifolia* and *C. rubra*, the Irish *Spiranthes* (north and south), *Listera cordata*, *Epipogium* and *Ophrys Trollii*.

THE Director of Kew has arranged that Mr J. Hutchinson should be sent on a botanical tour in connection with the meeting of the botanical authorities in the Union of South Africa. It will be a very comprehensive tour and should result in many additions being made to the Gardens and Herbarium.

OUR late member, Mr James Sanderson, uncle of Miss I. M. Hayward F.L.S., left £30,000 to the town of Galashiels to build cottage homes, and over £150,000 for charitable purposes, including about £35,000 for the Faculty of Science at Edinburgh. Miss Hayward's brother was the Provost of Galashiels last year.

Mr R. W. BUTCHER, 46 Newgate, Barnard Castle, Co. Durham, wants well-selected specimens of the following plants for illustration:—*Fumaria Martinii*, *Saxifraga platypetala*, *Callitriche polymorpha*, *Centaurium Scilloides*, *Utricularia intermedia* (flowers only), *Rumex rupestris*, *R. elongatus*, *Potamogeton Drucei*, *Zannichellia gibberosa*, and *Poa irrigata*.

MR BENJAMIN MAUND, who was the author of "The Botanic Garden," published in 1825, a book which ran into 13 volumes and in which the plates of garden plants were well drawn and coloured, was honoured on April 14, 1928, by having a marble tablet of him, which had been presented by F. W. Baxter, unveiled and dedicated by the Rev. F. G. Ellerton, vicar of Tardebigge.

OXFORD ARCTIC EXPEDITION. Our member, Mr Colin Trapnell, was one of those who took part in this expedition under the leadership of Dr T. G. Longstaffe, Trapnell being the Hon. Secretary and Treasurer and Botanist. The Godthaab district of Greenland was selected for the exploration, about 8.3 square miles being investigated, 150 flowering plants and 130 insects being found. The plants are being sent to Kew for determination.

MR JOHN W. HARSHBERGER, Ph.D. An Autobiography with a portrait has been published at Philadelphia in 1928. It gives most interesting details of his long, active, and useful life. There are facsimile replicas of his Certificate as Hon. Members of the Soc. pro Fauna et Flora Fennica, a list of the names of his students, of his collection of Botanical Portraits, his Journeys and Bibliography, the latter occupying 10 pages with 320 titles.

MR H. M. HIRST, F.R.H.S., has been doing most commendable work at the Scarborough Herb Garden which he has made most interesting and successful. We are afraid that this severe winter may have done much damage. The sole income is derived from the sale of surplus plants. All the labour, and it is great, is given voluntarily. Surplus plants may be had—5 for 2/6, post free. Seeds of Henbane and Stramonium, 3d a packet. Address—66 Esplanade, Scarborough.

NATURE RESERVES, REPORT OF THE SOCIETY FOR THE PROMOTION OF, 1928. President, Viscount Ullswater. An additional piece of ground has been acquired at Wood Walton, the home of *Viola montana*, and the place where the Large Copper Butterfly from Holland has been introduced and where it is doing well. The Society is keenly interested in the preservation of our wild flowers and has issued and distributed posters, 1220 copies being sent to a single county.

CHARLES DARWIN'S residence, Down House, Kent, has been transferred, owing to the generosity of G. Bulkiton Brown, F.R.S., to the British Association, with an endowment. He has also paid the expenses of obtaining a charter for the Association. It is intended to make the study at Down House, in which the "Origin of Species" was written, with the furniture and accessories as near as may be to the time when Darwin lived there. In fact there is being done for Darwin what has been so well done at Hammarby for Linnaeus.

A GRANT TO KEW GARDENS. In consideration of the value of the work done in economic botany for the development of the resources of the Empire the Empire Marketing Board has made a grant to Kew Gardens of £1200 a year for four years, to rise to £1380 in the fourth year. The Director of the Gardens (Dr A. W. Hill) and the economic botanist (Dr H. C. Sampson) have visited different parts of the Empire on botanical missions, an outcome of which has been improvements in flax-growing and experimental work, now in progress, on tropical maize, bananas, and Kenya Colony grasses.

SOLUTION FOR PREPARING HERBARIUM SPECIMENS. Corrosive Sublimate 10 grammes. Commercial Formaline 100 grammes. Glycerine 10 grammes. Methylated Spirit to make 1 litre. After being dried and mounted, the specimens are sprayed with this solution and then placed in porous paper, and put under light pressure for 12-15 hours. They may then be put in the Herbarium. Plants such as Heaths, Sedums, etc., which after drying drop their leaves, are advantageously immersed in the solution, in a porcelain photographic dish, for two or three hours before pressure and drying. H. M. Sietti in *Le Monde des Plantes*, December 1927.

WHEAT. The oldest wheat was found in the Sumerian exploration (3500 B.C.). It was identified as *T. turgidum* by Prof. Percival, and as *T. vulgare-compactum* by the Botanical Department of the Field Museum at Chicago. Mr Phillips, of the United States Bureau of Agricultural Economics, agrees with the latter determination, as does Dr Stapf. As it is acknowledged that *compactum* or Club wheat is the best breadmaking wheat, it shows that the Sumerian farmer had succeeded in obtaining and growing a wheat of finer grade than the farmers of predynastic Egypt. I have been led to believe that some wheat obtained from a cinerary urn in Northamptonshire was of a much greater age. It was identified, I believe, as *T. antiquorum*, by Prof. Percival, but *dicoccum* was also said to be present.

A GIANT WISTARIA. An enormous Chinese wistaria, growing in Sierra Madre, California, is said to cover an area of almost three acres. This enormous vine was planted thirty-five years ago, and every year, at blossoming time, the community of Sierra Madre, numbering about 5000, holds a wistaria fête under its branches. These fêtes attract large numbers of visitors, and it is recorded that as many as 50,000 people have visited the Fennel Gardens, in which it is growing, in one season while it is in bloom. The owner of the wistaria gives an interesting account of the development of the specimen, and describes how, after encircling the house, the branches were allowed, with a little assistance, to circulate through the surrounding trees. This wistaria is never pruned in any way, and still maintains the deep violet colouring of its blooms.—(*Gard. Chron.*, 1928, 83. 274.)

ROADSIDE TREES AND SHRUBS. Alderman G. C. Druce, writing to *The Times* on "Roadside Planting: Choice of Trees and Shrubs," said:—This desirable project, as outlined in *The Times*, is most highly to be commended. As it is, our roadways through Britain are becoming horribly disfigured, and it will need much labour to counteract the damage to rural scenery that is being done. The compensating feature is that to a vast mass of people, to whom Britain was practically unknown, almost all the countryside is now available. To the list of trees and shrubs mentioned in *The Times* one trusts that the Norwegian maple, which is so charming a feature on the roadsides in Sweden and Norway, may not be forgotten. Our own maple, white beam, holly, and mountain ash are also desirable, as are the Wheatley and Plot's elms. Holly and some conifers should also be included, and for sharp road-cuttings *Cotoneaster microphylla* and *C. Simonsii* will cover unsightly ground. One need not refer to the popularity and usefulness of rhododendrons for sandy soils. In Cyprus this spring it was most delightful to see the successful efforts of that most able forest officer, Dr Unwin, where, of course, a different set of species had to be chosen. These include acacia species, ailanthus, various species of eucalyptus, cypress, etc. In Egypt, too, a very successful planting of avenues has been undertaken, as between Alexandria and Aboukir, where casuarinas, acacia, bamboos, and eucalyptus offer a grateful shade and produce a most pleasing effect.

MR E. V. LUCAS contributed to the *Sunday Times*, July 1928, a commendatory note on Flora's League, which Sir Maurice Abbot-Anderson has under his aegis. People interested and willing to join a fee-less society, should write to him at 78 Portland Place, W.1. Mr Lucas's paper has the following charming passage:—I fancy that I am no botanist, not only because I do not carry an enamelled tin specimen box, but also because, wherever I enjoy one of those mental visual evocations that Wordsworth describes in the poem on the daffodils, it is concerned with masses of colour rather than with solitary blossoms. I prize above the highly-desired Pasque flower a cerulean flood of bluebells drowning a coppice. Closing my eyes, I can see at this moment, though I saw it years and years ago, a hillside meadow in Kent, a mass of uninterrupted delicate mauve from an invasion of pansies. I can see a flood of lighter mauve, with less blue in it, in a valley near Interlaken, the effect of colchicum in its millions. I can see banks and walls of a darker, redder hue, nearer blood, as one approached Gravesend from London by train, one June day, caused by armies of valerian. I can see a hollow cornfield under a Hampshire down where scarlet poppies had submerged every sign of green. I can see, half a mile on the Paris side of Barbizon, two-thirds of the French flag inextricably mixed in another such field, where this time the poppies were joined by cornflowers in a united effort to suppress the wheat; but I have still to see the fritillaries growing wild near Oxford, of which so many poets sing.

NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST OR NATURAL BEAUTY. Report of the acquisitions during the year 1927-8, include:—Bramshaw, Winsor and Cadnam Commons in the New Forest, through the kindness of the late Mr Briscol Eyre and his wife, who herself has contributed £500 and some valuable timber. 'Benty Farm, Harrock Wood, and Burton Wood in the Wirral peninsula, through the kindness of Sir Alfred Paton, Mr W. C. Stapleton, Mr Joseph Brockenhurst, and Mr and Mrs Bulley. Brackley, Northants. A small park of three acres, has been presented by Mr Cyril Collingham. Hackhurst Heath, near Shere, Surrey, a delightful piece of ground of 13 acres, commanding beautiful views, has been given by Mr Beresford Heaten. Stoneacre, near Otham, in Kent. This fourteenth century house and 10 acres of ground, about four miles from Maidstone. Mr Aylmer Vallance has been most generous in offering not only these but the old furniture and fittings in the house. Morven, near Potters Bar. A gift of about 20 acres, by Mr A. B. Sanderson. An open space was most desirable, as the population so greatly increases in this neighbourhood. Pengethley Grove, near Ross, in Herefordshire, a most attractive piece of country, has been offered by Miss C. B. Symonds. Golden Hill, near Canterbury, a view point of about 3 acres, has been presented by Miss Redpath. Petts Wood, Chislehurst. An additional 16 acres has been bought by the Willett Memorial Fund. Glencorn Wood in the Lake District. The whole of the sum of £2700 has now been obtained for the purchase of this interesting estate. Witley Common, Surrey. An addition of 137 acres has been made to this holding. Hamble River, S. Hants. The borders of this have been saved owing to local effort, raising £1200, and by the gift, in memory of their daughter, Priscilla, by Mr and Mrs Hugh Jenkyns, of £1000, leaving a balance of £3000 yet to be found. Bowners, Windermere. The title deeds of the Rectory Field were received by the Prince of Wales on behalf of the Trust on July 1, 1927. Hindhead, Surrey, better known as Woodcock Bottom, has been secured mainly through the energy of Dr Marie Stopes. Stonehenge. Only £14,000 is now required to secure the 600 acres bordering this ancient monument. Longshaw Moor, near Sheffield. The saving of this required £14,000, and of this £9000 has been raised by Sheffield. Bolt Head near Salcombe, S. Devon, has been secured for the Nation. Great indebtedness is due to the members of the Heriot family. It may be added that the dinner of members and friends in November was most successful—over 400 being present. Owing to the sad death of Viscountess Gray of Fallodon, Lord Gray was unable to be present, the chair being taken, after the reception, by Viscount Ullswater.

Sir James E. Smith. 1928 was the centenary of Sir James E. Smith, one of the founders of the Linnean Society, and eventually the purchaser of the Herbarium, Books and Collections of the great Swedish Botanist, when he was only 25 years old. This arose from his breakfasting with Sir Joseph Banks, who told him that he had been offered the collection by Prof. Acreel for 1000 guineas, but that he had declined the offer. John Sibthorp of Oxford was "commendably desirous of adding a great treasure to Oxford," but as Smith says, the acquisition depended "on a resolute and decisive step, which was already taken, and not any management of negotiations to which the person entrusted with the sale was superior. This competition occasioned no interruption in the friendship just then founded between the parties concerned." Smith's father, however, found the money, and the collection came to his son in England, having been brought by the ship appropriately named "The Appearance" at the end of October in 1784. Smith was annually elected President of the Linnean Society for forty years, doubtless in the hope that he would give his collection to the Society. His executors, however, asked £5000, eventually accepting three thousand guineas, which it took the Society many years to pay off. The well-known Sowerby's "English Botany," 1790-1814, was edited by Smith, who was not a little annoyed to find it was popularly known as "Sowerby's" English Botany. He also prefaced the volumes of Sibthorp's "Flora Graeca," and prepared the "Prodromus." In order to prepare the text of the work he had a yearly stipend of £150, beginning in 1801, the last payment being made to Lady Smith (for the 12th fasc.), May 20, 1928. The volumes were very slowly produced. He did not appear to have had as much as that sum every year, but as I have all the accounts one will be able to ascertain. However, by February 23, 1819, he had received his 16th half-yearly stipend, leaving a balance of £450. Smith was the author of the "Flora Britannica" and the "English Flora" and made many other contributions to Botanical Literature, but he did not like rivals, and his treatment of Hudson, Lightfoot, Withering and Salisbury was not marked by undue generosity, and occasionally was unfair. However it is quite in keeping that his centenary should be honoured and a tablet recording his name and works will be placed probably in his village church near Norwich. Smith's animus against Lightfoot is shown in *E.B.*, t. 289, where he ignores Lightfoot's discovery of *Goodyera*, and says "his account is compiled from Haller without acknowledgment . . . His whole book is nearly made up of such plagiarisms, and he is hence often deservedly led astray." See also *Rep. B.E.C. Supp.* W. *Ross*, 1928, for Pennant's resentment of this criticism, which did so much to retard the appreciation of the *Flora Scotica*.

ADDITIONS AND CORRECTIONS.

Report 1927.

p. 288. Line 19. Read " M. Patrice Riencourt de Longpré."
p. 289. Line 12. For " Johnstone " read " Johnston."
p. 291. Line 7. For " *1927* " read " *1926.*"
p. 291. Line 11. For " 1926 " read " 1925."
p. 292. Line 34. For " *brevidens* " read " *brevifolia.*"
p. 299. Line 12. For " ORIENTALIS " read " FLAMMULA."
Line 13. For " Miss MAUD NEALE " read " Mrs S. W. SUTTON.
p. 322. Line 5. For " Edenbridge, Kent," read " Hartfield, Sussex."
p. 362. Line 10. For " Aubrey " read " Antony."
p. 370. Line 26. For " ever " read " even."
p. 371. Line 21. For " *Lithospermum* " read " *Leptospermum.*"
p. 373. Line 40. For " genera " read " genus."
p. 395. Line 31. Delete var. *stipularis* Mér. etc.
p. 408. Line 3. For " LITTORALIS " read " LITTORALE."
p. 417. Line 16. For " PARVIFLORA " read " PARVIFOLIA."
p. 427. Line 39. For " PRASIUM " read " PHLOMIS."
p. 439. Line 33. Add " Shetland."
p. 448. Line 39. For " SIBIRICUM " read " RUTHENICUM."
p. 515. Line 16. For " 45. Monmouth. Wells " read " 36. Hereford. Walls."
p. 518. Line 23. Insert " Ashburton, Devon, Miss LARTER."

Report 1928.

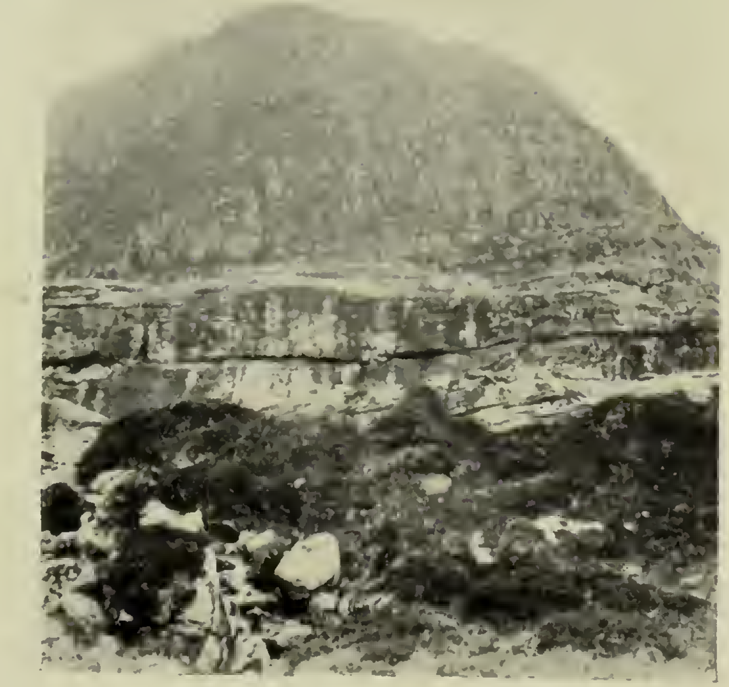
pp. 635, 636, 637. The Chenopods, C. ALBUM, sub-sp. OVATUM; C. VARIABILE, var. MURRII; C. LEPTOPHYLLUM, var. LEPTOPHYLLOIDES; C. AMBROSIOIDES, var. DENTATUM; C. HIRCINUM, var. MULTIDENTATUM; C. PALLIDICAULE, and C. FOETIDUM, var. GRACILE are duplicated.

Copies of B.E.C. Reports wanted by the Secretary.

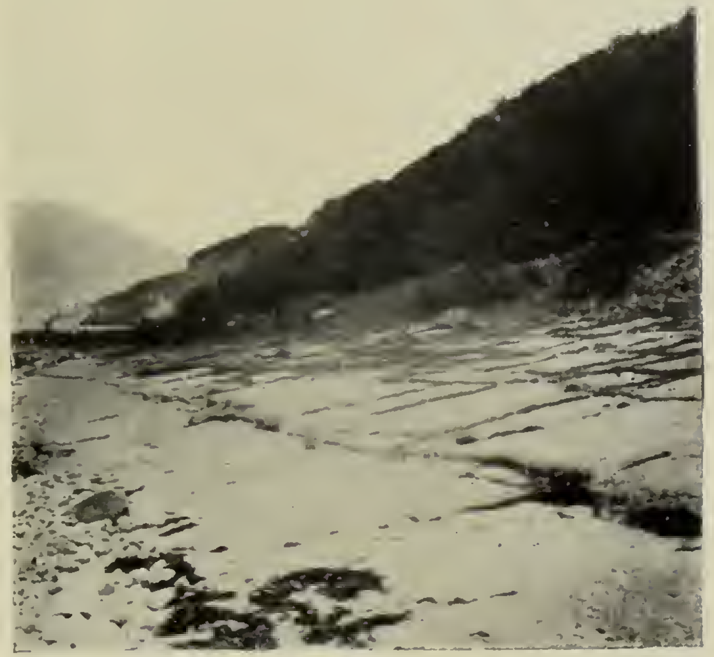
Could members supply me with the Secretary's Reports for 1879, 1903, 1909, 1916, 1917, and the Distributor's Report for 1926.

FLORA OF WEST ROSS

BRIT. MUS. (N.H.)
BOTANY



AN TEALLACH.



LIMESTONE PAVEMENT AT APPLECROSS.

[Supplement to Report of The Botanical Society and Exchange Club of the British Isles for 1928.]

THE FLORA OF WEST ROSS

WITH INTRODUCTORY SKETCHES OF THE TOPOGRAPHY AND
CLIMATE AND ALSO BIOGRAPHICAL NOTICES OF
THOSE WHO HAVE CONTRIBUTED
TO THE FLORA SINCE 1778.

G. CLARIDGE DRUCE, D.Sc., LL.D., F.R.S.

Xref

ARBROATH : T. BUNCLE & CO.

1929.

PREFACE.

The county of Ross, the name of which is said to be derived from *ros*, a headland, is very large, covering as it does 1,976,707 acres, or about 3088 square miles, including its islands, which are mainly on the West coast, and which have an area of 404,413 acres.

The area is extremely mountainous, especially the Western half; indeed, in the whole of the county there are no fewer than 95 tops over 3000 feet, besides 42 others which are shared with the county of Inverness. Not one attains the height of 4000 feet, but sixteen are over 3500 feet, Carn Eighe, 3877 feet, being the highest mountain in the county. So far as the mainland of the Western portion is concerned, nine-tenths of it are above the 1000 feet line.

In "Topographical Botany," Mr Watson divided the great county of Ross into two parts, the Eastern part being separated from the Western by a line traced along the watershed between the Eastern and Western coasts. The detached portions of Cromarty belong to East or West Ross according to the geographical position of the fragments. Politically the Lewis belongs to West Ross but, for Botanical purposes, with Harris and Uist it is made into a separate county, No. 110, the Outer Hebrides. So the large area of Lewis has to be deducted from the island area of 404,413 acres.

The areas of the two divisions are nearly equal, so that for Botanical purposes we may estimate that of West Ross, including the islands other than Lewis, at about 800,000 acres, nearly double that of Oxford, Berks, or Bucks. The water parting of the two divisions is very irregular, taking as it does the tops of the high hills for the greater part. But the partings are not always well marked, and, owing to geologic and climatic factors, are sometimes obscure.

Many of the mountains, like Beinn Fiadha, Beinn Dearg, and Sgurr Mhor Fannich are in both water partings, and several are in the water partings of Ross and Inverness. However, Western Ross has the magnificent An Teallach, Ben Alligin, The Slioch, Ben Eay, and Sgurr Fhuaran entirely within its boundary. East Ross has the enormous bulk of Ben Wyvis, 3249 feet (the reputed home of *Alopecurus alpinus*), and Sgurr na Lapaich, 3773 feet, a very beautiful hill, entirely within its borders. It shares with Inverness Mam Soul, 3862 feet, and Carn Eige, 3877 feet.

The Lochs are numerous, and in Loch Maree it possesses one of singular beauty. Loch Fionn, 8 miles long, is celebrated for its heronries. There are also Loch an Fada; Loch Droma, the feeder of the river Broom; Lochs Damh, Baddagyle, Vallick, Lundil, Lurgain, Skinaskink, and other considerable pieces of water, besides hundreds of lochans especially congregated in the flat and dreary district of Coigach

It is, however, the coast line which is the most extraordinary natura feature of this wonderful area, for it is broken into countless beautifu bays and sea lochs. It stretches for the enormous distance of over 300 miles on the Western mainland. The chief inlets are Loch Duich, Loch Long, Loch Alsh, Loch Carron, Loch Kishorn, Loch Shieldaig, Upper Loch Torridon with magnificent rocky scenery, Gairloch, Loch Ewe, the spacious Gruinard bay with its sand-lined inlets, Little Loch Broom with its low level sandstone promontories, Loch Broom with its zone of meadow land, and Enard Bay.

The islands are very numerous, but only eleven are inhabited. These include Gillean, Crowlin, Horrisdale, Dry and Ewe, the islands in Loch Maree, Martin and Tanera More in the Summer Isles. The sea coast, in the main, is rocky or bordered with large shingle, and the stormy seas give little chance of persistent vegetation. There are extensive deposits of sea-sand, but the proportion of fixed dune is not great. Much of it is mobile and the vegetation, as at Gruinard, is sparse or consists (as in the case of the North Coast of Donegal) of but few species. Even the less mobile sands have a changing flora, much damage being caused by the wind and waves in high seas. It must also be borne in mind that much of the 300 miles of coast line remains unexplored, so we may reasonably expect five or six more species to be added to the list of plants.

If Ross were once a wooded area, that can hardly be claimed for it now. Many of the oak and pine woods of the Loch Maree district were cut down to smelt iron in that area. There are vestiges of these woods still existing at Maree, in Flowerdale and Dundonnell. Large ash trees still grow at Maree and Flowerdale, and there are native hollies, alders, birches, hazels, mountain ash, aspens, and wych elms.

The fauna is still rich. Golden Eagles have increased of late years, and there are to be found Wild Cats, Buzzards, Merlins, and numerous species of sea birds.

GEOLOGY.

A passing glance can only be given to this subject. It may be stated that for Botanical purposes West Ross is extremely unproductive. This need not be wondered at when we see that so much of its surface is occupied by Lewisian Gneiss, a most untractable material. Quartzites, mica-schists, and garnetiferous mica are not much better, and the Torridon sandstone, which gives better scenic effects, cannot be called fertile. The Torridon sandstones rest unconformably on the Lewisian Gneiss, as may be seen between Maree and Torridon. They build up the mountain districts of Applecross and Coigach, the east of Enard bay, the district between Gruinard and Loch Maree, and between that place and Gairloch, and both sides of Middle Loch Torridon.

At Cnochan the Fucoid beds and limestone offer the richest botanising ground in the vice-county.

In the neighbourhood of Kishorn, where there is a little limestone near the surface, the rocks have been completely overturned and the ancient Gneiss has been piled upon the Torridon sandstone.

RAINFALL.

The rainfall of West Ross-shire is extraordinarily high. In eleven years, from 1917-1927, the average fall of rain measured at Glen Shiel was 79 inches, the highest being in 1926 with 90 inches, the lowest in 1925 with 62.63 inches. At Gairloch, in 1925, there was much trouble from the drought. The five years' average at Achnashellach was 123 inches, with a maximum in 1921 of 138.53 inches, and a minimum of 104.20 in 1919. Loch Torridon over eleven years had an average of 88.5 inches, with the highest 98.62 inches in 1923, and the lowest 78.33 inches in 1925. These figures vividly compare with those of Cromarty in East Ross, where the average of eleven years give 26 inches only, with a minimum of 21.52 inches in 1921. Even at Tongue in West Sutherland there is a vast difference, for the eleven years' average is only 41.36 inches, the wettest year being 1923 with 50.43 inches, the driest 1920 with 32.86 inches. The average of ten years shows that at Torridon the number of days on which more than .01 of an inch fell is 236. At Loch Carron, in 1926, 269 days had that amount, and as many as 283 days were registered in 1918. Even in the drought year of 1925 there were 245.

Curiously enough, although the difference between the rainfall of Loch Torridon and Cromarty was no less than 62 inches, yet the rainy days in Cromarty averaged over ten years 209, a difference of only 50 days. Even the heavy rainfall of West Ross is outdone by Quoich in West Inverness, which in 1917 had a rainfall of 191 inches.

With this rainfall need one wonder at the predominance of paludal and uliginal plants, or at the extent of ground occupied by deer forest.

It may be added, for comparison, that whereas the average rainfall at Loch Broom is 50.4 inches, that at Loch Quoich in Inverness in 1922 was 131 inches, at Mickleden in the Lake District 137 inches, at Borrodale 150 inches, and at Stye in Cumberland 172 inches.

MOUNTAINS.

No area in Great Britain is so mountainous as that of West Ross-shire, although Inverness-shire, exclusive of Skye, has a larger number of peaks above 3000 feet, claiming as it does 147 out of a total number of 538. Entirely within Ross-shire there are 95 peaks above the 3000 feet mark, while another 42 are shared with the neighbouring county of Inverness. A list of these summits, with the spelling there used, is appended, taken from a paper by H. T. Munro, in the "Scottish Mountaineering Club Journal" of September 1891, where most useful details are given as to the precise locality of the hills and the nearest starting point to reach the summit.

Sgurr Leac nan Each, 3013 feet.
Sgurr na Creige, 3082 feet.
The Saddle—W. top 3196, and 3317 feet.
Sgurr na Forcan, 3100 feet.
N. Saddle, 3000 feet.
Fraochag, 3000 feet.
Sgurr na Sgine, 3098 feet.
Creag a Mhaim, 3102 feet.
Drum Sionnach, 3222 feet.
Aonach air Chrith, 3342 feet.
Maol Cheann-dearg, 3214 feet.
Sgurr an Doire Leathain, 3272 feet.
Sgurr an Lochain, 3282 feet.
Creag nan Damh, 3012 feet.
Ben Ouran, Sgurr Fhuaran, 3505 feet.
Sgurr na Carnach, 3270 feet.
Sgurr na Ciste Duibhe, 3270 feet.
Sgurr na Spainteach, 3129 feet.
Saileag, 3124 feet.
Sgurr a Bhealaich Dheirg, 3378 feet.
Aonach Meadhoin, 3284 feet.
Carn Fuaralach, 3241 feet.
Ciste Dhubh, 3218 feet.
Coire Odhar, 3295 feet.
Garbh-leac, 3676 feet.
Sgurr nan Conbhairean, 3636 feet.
Drochaid an Tuill Easaich, 3250 feet.
Creag a Chaoruinn, 3260 feet.
Carn Ghluasaid, 3140 feet.
A' Ghlas Bheinn, 3006 feet.
Cenn na h-Aon Choise, 3150 feet.
Beinn Fhada, 3383 feet.
Sgor a' Dubh Doire, 3000 feet.
Stuc Beag, 3250 feet.
Stuc Mor, 3250 feet.
Sgurr nan Caethreamhnan—E. top 3771 feet. W. top 3737 feet.
Creag nan Clochan Geala, 3282 feet.
Coire nan Deareag, 3080 feet.
Creag a Choir Aird, 3188 feet.
East top, 3058 feet.
Ridge South of, 3058 feet.
An Socach, 3017 feet.
Coire Coulavie, 3508 feet.
Ciste Dhubh, 3606 feet.
Mam Soul (Mam Sodhail), 3862 feet. Commanding a view of both seas.
Carn Eige, 3877 feet.
Coire Lochan, 3006 feet.
Beinn Fhionnlaidh, 3294 feet.
Creag na h-Eige, 3753 feet.
Sron Garbh, 3500 feet.
An Leth-Chreag, 3443 feet.
Tom a' Choinich Beag, 3450 feet.
Tom a' Chionich, 3646 feet.
Sgurr na Lapaich, 3773 feet.
Rudha na Spreidha, 3250 feet.
Sgurr na Clachan Geala, 3250 feet.
Creag a' Chaoruinn, 3000 feet.
Braigh a' Choire Bhig, 3303 feet.
An Riabhachan, 3696 feet, from which both seas are visible.
West top, 3406 feet.
An Socach, 3503 feet.
Sgurr Ruadh, 3254 feet.
Carn na Gobhar, 3242 feet.
Sgurr a' Choir Ghlais, 3554 feet.
Creag Ghorm a' Bhealaich, 3378 feet
Sgurr Fhuar-thuill, 3439 feet.
Sgurr na Festig, 3326 feet.
Maoile Lunndaich, 3294 feet.
Creag Toll a' Choin, 3295 feet.
Carn nam Fiaclan, 3253 feet.
Bidean an Eoin Deirg, 3430 feet.
Sgurr a' Chaoruinn, 3452 feet.
Sgurr Choinnich, 3260 feet.
Bidean a' Choire Sheasgaich, 3102 feet.
Lurg Mhor, 3234 feet.
Meall Mor, 3190 feet.
Moruisg, 3033 feet.
Meall a Chuin Deirg, 3060 feet.
Sgurr Ruadh, 3141 feet.
Beinn Liath Mhor, 3034 feet.
Beinn Alligin Spidean, 3021 feet.
Sgurr Mor, 3232 feet.
Liathaich, 5 tops, 3456-3050 feet.
Stuca Choire Dhuih Bhig, 3000 feet.
Ben Eay and Sail Mhor, 3217 feet.
Ruadh-stac Mhor, 3309 feet.
Coinneach Mhor, 3130 feet.
Spidean Coire nan Clach, 3220 feet.
Sgurr Ban, 3288 feet.
Sgurr an Fhir Duibhe, 3160 feet.
Creag Dubh, 3000 feet.
Slioch, 3260 feet.
Sgurr an Tuill Bhain, 3058 feet.
A' Mhaighdean, 3100 feet.
Mullach Coire Mhic Fhearchair, 3320 feet.
Sgurr Bhan, 3194 feet.
An Teallach, 3483 feet.
Glas Mheall Mor, 3176 feet.
Sgurr Fiona, 3474 feet.
Sgurr Creag an Eich, 3350 feet.
Lord Berkeley's Seat, 3300 feet.
Corrag Bhuidhe, 3360 feet.
Top above Cadha Gobhlach, 3040 feet.
Glas Mheall Liath, 3080 feet.
A' Chailleach, 3276 feet.
Sgurr Breac, 3240 feet.
Meall a' Chrashaidh, 3062 feet.
Carn na Criche, 3148 feet.

Sgurr nan Clach Geala, 3581 feet.
Sgurr nan Each, 3026 feet.
Sgurr Mor, 3637 feet.
Beinn Liath Mhor, 3000 feet.
Meall nam Peithirean, 3000 feet.
Meall Rairigidh, 3100 feet.
Meall Gorm, 3000 feet.
An Coileachan, 3015 feet.
Fionn Bheinn, 3060 feet (Fingal's Hill, which commands a splendid view of Sgurr Mor).
Beinn Dearg, 3547 feet.
Cona' Mheall, 3200 feet.
Meall nan Ceapraichean, 3000 feet.
Ceann Garbh, 3063 feet.
Eididh nan Clach Geala, 3039 feet.
Seana Bhraigh, 3041 feet.
Ben Wyvis, 3429 feet.
An Socach, 3295 feet.
An Cabar, 3106 feet.
Tom a Choinnich, 3154 feet.
Glas Leathad Beag, 3000 feet.
Top of Coire Lochain, 3000 feet.
Feachdach, 3018 feet.
Am Traochagach, 3120 feet.
Cona Mheall, 3200 feet.
Beinn Dearg, 3547 feet.
Meall nan Ceapraichean, 3006 feet.
Clann Garbh, 3063 feet.
Eididh nan Clach Geala, 3039 feet.
Seana Bhraigh, 3041 feet.

RIVER SYSTEMS.

The rivers in West Ross have but short courses, owing to the mountainous character of the area. There are innumerable small streams, some being designated as rivers on the map. A short account is given of the principal ones.

The Applecross River has a course of about 15 miles. One branch comes from Attadale at about 2200 feet, a second from Meall an Thireachan, 1700 feet, and a third from Sgurr nan Caorach, 2509 feet, skirting the hill which separates it from the Beallach nam bo. It passes through the policies of Applecross House ere it falls into the Bay.

The River Broom, which falls into the sea loch of that name, comes from Loch Droma and receives streams from Sgurr Mhor Fannich, over 3500 feet, and from Loch a Bhraoin. Near Braemore it has cut its way through the rock, forming one of the most striking gorges in Scotland. There is a good waterfall at the head of the gorge. There is, or was, a mass of vegetation about the precipitous sides of the gorge, including some good *Hieracia*. In ten miles the stream drops to the sea-level from an altitude of over 3000 feet.

The River Craig, which falls into Loch Torridon, rises from the sides of Meall Tam Buidhe, 1563 feet, and passes through Loch an Sgeireach. A longer feeder comes from the Shieldaig Forest and Ben Vrackie, 2000 feet.

The River Carron in its course of about 14 miles affords some interesting scenery. It rises west of Achnasheen in Strath Carron.

The Elchaig is about ten miles long, and in the seven miles of its course drops 2700 feet, so that there is not much chance for aquatic vegetation to fix itself. The stream, which rises on the slopes of Sgurr nan Ceathreamnan at nearly 3000 feet, forms the splendid falls of Glomach. It falls into Loch Long.

The River Ewe, which comes from Loch Maree, has only a short course of three miles to Poolewe. It drains Loch Maree, which is about 13 miles in length. The Kinlochewe stream, which enters at its head, has a course of about 14 miles. Some of its feeders come from the slopes of the Slioch, 3000 feet, and from Lochan Fada, others from Ben Eay, while the Glen Docharty stream comes from Fionn Bhein at 3000 feet. The Ewe and its tributaries form a varied and romantic scenery of a high order.

Gruinard and Little Gruinard Rivers. The latter issues from the Fionn Loch, which itself is fed by streams coming from A Mhaighdean, 2500 feet, and from the high ground of Beinn a Chaisgen Mor, 2800 feet. Between this and the river Gruinard a small stream, the Inveriavanie, flows out of Loch a Mhadaih Mor, which itself is supplied by a stream coming from Loch Toll a Mhadaidh, 1545 feet above sea level, its course being about ten miles. The bigger Gruinard River is one of the longest and most interesting streams in the county. Its upper branches rise on Sgurr Fionna, 3474 feet; Beinn a Cladfeimh, 2800 feet; Sgurr Ban, 3194 feet; and A Mhaighdean, 2500 feet. These pass down Strath na Sheallag into the Loch about four miles long of that name whence it is about ten miles to Gruinard Bay.

The River Kerry runs through the Flowerdale Forest, draining Coire Beag at over 2000 feet, passing into Loch Bahan Sgalaig, thence through wooded country and bordered by steep rocky banks to Gairloch. Loch Badan is fed by a stream coming from Loch Naih Oidloche, near Beinn an Eoin, 2300 feet.

Kanaird and the Runie Rivers, which rise from Culbeag, flow from Rappoch through Loch Chroisg.

The River Kirkaig in the north of the county runs into Enard bay from Loch Veyatie, on the borders of Ross and Sutherland, and this itself is reinforced by streams rising from the Cnochan Rocks and from Cul Mhor, 2786 feet. This area has had but little botanical attention given it; it may well repay working.

The River Kishorn has a course of about seven miles ere it falls into the sea at Loch Carron. The stream itself rises from the hills of Sgurr a Gharaid, 2300 feet, and Beinn Bhan, 2600 feet.

The River Polly, in the Forest of Inverpolly, drains the country from Cul Mor, passing through the curiously shaped Loch Skinaskink, and thence into Loch Polly. It has an interrupted course of about eight miles.

The Shiel, which is received by Loch Duich, is fed by streams rising from either side of that splendid Glen which is bordered with hills about 3000 feet in altitude, amid which Sgurr Fhuaran stands prominent Its short course to sea level is about 14 miles. The trough of the Glen is about 700 feet deep, the rapid fall being that of the streams down the mountain slopes.

The River Torridon in a short run receives the drainage of the east slopes of Ben Alligin, 3000 feet.

The Ullapool River, noted for its salmon, drains Loch Achall, and before it reaches Loch Broom it cuts its way through a fine limestone gorge Loch Achall is fed by the Rhidorroch River.

BIBLIOGRAPHY.

1778. The first allusions to the Flora of Ross-shire are to be found in the two volumes of Dr John Lightfoot's "Flora Scotica" which was published in 1778 although the title page is dated 1777. The actual journey to Scotland for the material for this flora was undertaken in 1772. Lightfoot was born at Newent in Gloucestershire in 1735 and entered Pembroke College, Oxford, in 1753, whence he graduated in 1756. His cheerful disposition, courtly manners, and his knowledge of shells and plants so impressed the Duchess of Portland, then living at Bulstrode in Buckinghamshire, that she appointed him her Domestic Chaplain at a salary of £100 a year. He had acted as Curate of Colnbrook prior to his becoming her Grace's chaplain, and eventually became Rector of Uxbridge. He made the acquaintance of Pennant, the antiquarian, who invited him to accompany him to Scotland. The result of this journey was the "Flora Scotica." The itinerary is not given in detail but they travelled from Annandale north to Sutherland, visiting on their way the Falls of Clyde, the Isles of Arran, where he added *Carex pauciflora* to the British Flora, Bute, Jura, Colonsay, Iona, Islay, Mull and Rum. In this even to-day almost inaccessible island they gathered *Scirpus fluitans*, *Tofieldia*, *Saxifraga oppositifolia*, *Silene acaulis*, *Cherleria*, *Thalictrum alpinum*, *Arabis petraea*, *Vicia Orobus*, *Salix herbacea* and *Populus tremula*. In Gigha they found *Samolus*, and in Skye saw the recently discovered *Eriocaulon* in two or three lochs as well as *Pinguicula lusitanica* (which he miscalled *villosa*), *Polygonum viviparum*, *Dryas*, *Utricularia minor*, *Arctostaphylos alpina*, *Hieracium alpinum*, *Sparganium angustifolium*, *Arabis petraea*, *Habenaria viridis*, *Botrychium*, *Cryptogramma* and *Isoetes*.

As Lightfoot says, "most of the Hebrides, save the Long Island, were visited." They then came to Loch Maree where they gathered *Hymenophyllum*, *Circaea alpina* and *Pinus sylvestris*. Journeying to Dundonnell, they noticed on the way *Arctostaphylos alpina* and added two orchids to the British Flora—*Goodyera* and *Corallorrhiza*, neither of which has been refound, as well as *Pyrola secunda* and *P. minor*. I have been told that what was probably the wood in which the orchids grew was destroyed some years ago. Having explored Little Loch Broom they possibly ferried across to Ullapool for they made some interesting discoveries there. They must also have climbed some of the mountains at its head for they gathered *Vaccinium uliginosum* and *Cornus suecica*. Their way to Tongue in Sutherland led by that wonderful road which passes under the Cnochan rocks where they found *Lonchitis*, *Dryas* and *Asplenium viride* and in the lochs *Sparganium angustifolium*. The homeward journey is less easy to trace but one imagines that they visited Blair Athol, Forfar, and Aberbrothock on their way to Edinburgh and Kelso.

As we have seen, some time elapsed after the journey before the "Flora Scotica" was published. Pennant says that no sooner did it come out than "envy emptied her whole quiver, she employed every little archer to aim her envenomed dart and, unhappily, with too much success. The book received its condemnation." So Pennant withdrew the books and "imprisoned them for a few years in a darksome cell of a London warehouse." However, in due time, the work received a juster judgment. Despite mistakes the work has a definite value and the results of their investigations added many species to the British Flora, a few being new to science.

Lightfoot may be called the father of Ross-shire botany since to him we owe the first records of *Circaea alpina*, *Cynosurus caeruleus* (*Sesleria*), *Chenopodium maritimum* (*Dondia*), *Cornus suecica*, *Vaccinium uliginosum*, *Juncus trifidus*, *Epilobium alpinum*, *Arbutus alpina* (*Arctostaphylos*), *Pyrola minor*, *P. secunda*, *Satyrium repens* (*Goodyera*), *Ophrys Corallorrhiza*, *O. cordata* (*Listera*), *Dryas*, *Draba incana*, *Asplenium viride*, *Polystichum Lonchitis*, *Hieracium alpinum*, *Tanacetum*, *Poa maritima* (*Glyceria*), *Pinus sylvestris*, *Trichomanes tunbrigensis* (*Hymenophyllum peltatum*), *Osmunda Lunaria* (*Botrychium*), *Ulmus campestris* and *Sparganium natans* (*angustifolium* probably), a goodly list of 25 species. Three of these await rediscovery.

The next record for Ross-shire is one in *English Botany* under t. 2089, when Sir W. Hooker and W. Borrer found *Stachys ambigua*, a hybrid plant, in Strathcarron.

1821. Hooker, Sir Wm. Jackson, was born at Norwich in 1785, became Regius Professor of Botany at Glasgow in 1820 and Director of the Royal Gardens at Kew in 1865. While at Glasgow he published a "Flora Scotica" in 1821, but his additions to the Ross-shire Flora are few—*Hypericum Androsaemum* and *Pinguicula lusitanica*.

1835. Watson, Hewett Cottrell, who was born in 1804, was a copious writer on British Botany, and in 1835-7 brought out a "New Botanist's Guide." In this he inserts a solitary addition to the Ross flora in *Orobanche rubra* (*O. alba*) on the authority of Mr Bowman. Later on, as we shall see, in the first edition of *Topographical Botany*, 1874, he adds several more, on the authority of Prof. Churchill Babington.

1836. Murray, Alexander, a medical man of Aberdeen, published the "Northern Flora" in 1836. About a dozen Ross-shire plants are mentioned, but these were subsequently placed in the Eastern division of Ross-shire by Mr H. C. Watson, to which they almost certainly belong.

1839. Gordon, The Rev. George, LL.D., published the "Collectanea for a Flora of Moray" in 1839. He added *Pinguicula alpina* to the British Flora from the Black Isle of Cromarty. His West Ross discoveries include *Scirpus maritimus* from Kintail and *Eriophorum pubescens* (*latifolia*) from Plockton, Mr Stables. The other Ross-shire records belong to the eastern division.

1863. Anderson, George and Peter, in "The Guide to the Highlands of Scotland," 1863, mention *Atropa Belladonna* from the churchyard at Gairloch. It has now seeded down the cliffs there and is quite naturalised.

1842. THE PHYTOLOGIST, vol. i., 147, 1842, records, on the authority of Mr G. C. Smith, the finding of *Lycopodium annotinum* by Mr Stables in West Ross-shire.

1843. GRAHAM, PROFESSOR ROBERT, Regius Professor of Botany in Glasgow University, who was born at Stirling in 1786, gave an account of an excursion into Ross-shire in August 1842, in *Trans. Bot. Soc. Edin.*, February 9, 1843. His finds include [*Cornus suecica*], *Saussurea*, [*Hieracium alpinum*], *Rubus Chamaemorus*, [*Arbutus alpina*], *Azalea procumbens*, *Cherleria*, *Sibbaldia*, all the six *Lycopodiums* gathered at one spot near Loch Maree, *Tofieldia*, *Thalictrum alpinum*, *Malaxis* at bottom of cliffs, *Salix herbacea* on the red sandstone below Ben Tagshan, *Scirpus rufus* opposite Applecross; *Schoenus*, *Gentiana Amarella*, *Listera ovata* and *Epipactis latifolia* with pale flowers, on the limestone at Applecross; *Althaea officinalis* between Shieldaig and Jeantown in an old deserted garden; *Aconitum Napellus* and *Ulex europaeus* near Jeantown. Of these 20 are new records, besides the 3 alien species.

1873-4. DAVIDSON, A., gave in the *Scottish Naturalist*, vol. ii., 74-78, 1873-4, a Flora of Ross as far as the Dipsaceae but with very few precise localities. These unlocalised records are ignored here since they were in all probability based on specimens seen in Eastern Ross-shire, which differs from Western Ross-shire even more than it does from East Sutherland. Assuming that these plants are correctly named, which in two or three cases seems doubtful, the additions to the flora in this paper are:—? *Ranunculus Lingua*, Kintail and Gairloch (most likely large-flowered *Flammula*); *Trollius*, *Capnoides claviculata*, Melvaig; ? *Arabis petraea*, Gairloch (unlikely as it is a mountain plant rarely brought down to low levels by streams; it occurs on the hills above Loch Maree); ? *Draba rupestris*, Liatgath (error for *incana*); *Lepidium Smithii*, *Drosera anglica*, *Hypericum calycinum*, Balmacara (alien, planted); *Rubus corylifolius*, Glen Shiel; *Rosa involuta*, Gairloch (hybrid); *Pyrus Aria*, Loch Carron (planted); *Sedum roseum*, Baios Bhein; *Sedum Telephium*, not common, Gairloch (alien); *S. anglicum*, rare Gairloch (it is a common coastal plant); *Cicuta virosa*, Glen Shiel (I saw *Oenanthe crocata* there, but *Cicuta* is reported from the Hebrides so it may occur); *Apium nodiflorum*, Gairloch; *Oenanthe Lachenalii*, Gairloch; *Linnaea borealis*, "in an island on Loch Maree" (very doubtful). I have seen none of the last three plants in the county. We may perhaps claim 8 of these as additions. Two are aliens, and four are doubtful species.

1872. BABINGTON, THE REV. CHURCHILL, who was born at Roecliffe, Leicestershire, in 1821, visited Ross-shire and sent the results of his expedition to H. C. Watson prior to 1873, as has already been stated. His additions to the Western vice-county, which are printed in "Topographical Botany," include *Rosa spinosissima*, *Antennaria dioica*, *Cirsium heterophyllum*, *Hieracium anglicum*, *Utricularia intermedia*, *Galeopsis speciosa*, *Juncus triglumis*, *Rynchospora alba*, *Schoenus nigricans* and *Avena pubescens*.

1881. Druce, G. Claridge. West Ross County Catalogue, in *Report of Botanical Record Club* for 1881. The compiler of "Topographical Botany" was very anxious that I should investigate the flora of the county, which was one of the few vice-counties which had no list of common plants. The result, the details will be noticed later on, was that I found on this journey, in August 1881, 23 species which were already on record (16 of these without personal authority in "Topographical Botany"), 314 Phanerogams and 28 Cryptogams new to the county, besides 14 more or less naturalised species and 16 varieties. These are all detailed in the pages of the Report mentioned. Of these species, two—*Melampyrum sylvaticum* and *Juncus compressus*—need confirmation, but there were a few found on this journey which were not included, but which were afterwards determined—*Viburnum Opulus*, *Veronica humifusa*, *Eleocharis palustris*, *Carex vaginata*, *Melampyrum pratense*—6 in all, so that the total number was 358 additions to the flora as the result of a very strenuous fortnight's work.

1883. Bailey, Charles, a former Secretary of the Botanical Exchange Club, visited Gairloch, and in the Report of the Botanical Record Club for 1883, he adds *Anthyllis Vulneraria*, *Thalictrum maritimum* (Syme) Dr. (*dunense*), *Myosotis repens*, *Habenaria Gymnadenia*, *Euphrasia micrantha* and *Chara fragilis*. A memoir of Mr Bailey, with portrait, will be found in *Rep. B.E.C.*, 526, 1924. His herbarium and library are in the Botanical Department of the University of Manchester. In 1885 he recorded *Rosa marginata*, obviously incorrect. It is now referred to *Blondaeana*.

1885. Linton, the Rev. E. F., author of a "Flora of Bournemouth," who died in 1927, visited Strathcarron and recorded *Sherardia arvensis*, *Trifolium hybridum* (alien), *Geum intermedium* (hybrid), *Rosa squarrosa* (under the name *dumalis*), *Dryopteris Filix-mas*, var. *paleacea*—2 species, 1 alien, 1 hybrid, and 1 variety. His herbarium is in the British Museum at Cromwell Road.

1885. Linton, the Rev. W. R., author of the "Flora of Derbyshire" and an old member of the B.E.C., records in 1885 *Melica nutans* and *Rosa omissa*, var. *glabrata*. The latter has had a kaleidoscopic change of names, being first named *R. glabrata* by Scheutz.

1886. Bennett, Arthur, who did so much to fill up the gap in the comital distribution of British Plants, records in a series of papers in the *Scottish Naturalist*, *Carex helodes* (*laevigata*) and a variety of *Thymus Serpyllum* as having been found by Mr Grieve.

1886. ALLAN, JOHN, a member of the Summer Camp which met and investigated the country above Loch Torridon and Applecross. contributed to the *Transactions of the Botanical Society of Edinburgh*, pp. 117-120, 1886, the results of the labours of the members. 236 species in all were noted, of which 50 were claimed as additions. Of these, however, 24 had already been put on record, and 11 are evidently errors or need confirmation. Four of these have since been found in Ross-shire so about 15 are real additions. They include *Spergularia salina*, *Vicia sepium*, *Daucus*, *Anagallis tenella*, *Epilobium angustifolium*, *Habenaria bifolia*, *H. virescens*, *Potamogeton natans*, *Equisetum maximum*, and *Phyllitis Scolopendrium*. The errors or doubtful species include *Potentilla argentea* (doubtless *anserina* was meant), *Callitriche verna* (probably *stagnalis*, already recorded). *Scabiosa Columbaria*, *Artemisia Absinthium*, *Arctium Lappa*, *Veronica alpina*, *Symphytum officinale*, *Rumex maritimus*, and *Chara aspera*.

1886. DIXON, J. H. The same year was memorable owing to the publication of a very interesting volume on Gairloch, by J. H. Dixon. In addition to the history of the district he included a list of 368 plants. These were compiled with the assistance of Lady Mackenzie, Mrs John (Lady) Fowler of Braemore, Mr Oswald Mackenzie, Mr A. Davidson and others. This list is doubtless earlier than the list contributed to the *Transactions of the Botanical Society of Edinburgh* just mentioned. In looking through it one is struck with the many misnomers. It would probably be safer to ignore the greater number of the records, and possibly too much generosity has been shown by including as many as are given. The possibly correctly named plants are quoted; others, wildly improbable, are ignored. Those included are *Ranunculus hederaceus*, *Cakile*, *Sagina subulata*, *Hypericum perforatum*, *Malva sylvestris*, *Sisymbrium Thalianum*, *Erodium cicutarium*, *Rubus saxatilis*, *Chaerefolium sylvestre*, *Scandix*, *Ligusticum*, *Aegopodium*, *Galium verum*, *G. uliginosum*, *Mentha verticillata*, *Ajuga pyramidalis*, *Myosotis collina*, *Trientalis*, *Plantago*, *Coronopus*, *Salicornia*, *Polygonum viviparum*, *Mercurialis*, *Salix pentandra*, *S. alba* (planted), *S. Andersoniana*, *Habenaria albida*, *Cephalanthera longifolia*, *Listera ovata*, *Ophioglossum vulgatum* and *Asplenium septentrionale*—30 in all, of which I have personally verified 22. As showing the uncertainty attached to these names, I found that the record of *Lamium album* proved to be white-flowered *Galeopsis Tetrahit*, and that of *Chenopodium urbicum* to be *Atriplex hastata*.

1887. In this year I made my second visit to the county, but the wet weather and the midges were a dreadful trial. The vexatious restrictions of the selfish shooting tenants also made botanising difficult. The Slioch, Ben Eay, Lieuthgach and Torridon were explored, 29 additional species being obtained. Several confirmatory records were also made.

In that year Mr Charles Bailey added *Cerastium tetrandrum* from Gairloch.

1889. Kinlochewe was again visited, when a grass, previously found by me on Ben Eay, which one hoped might be *Agrostis rubra*, was named as a new variety to science by Professor Hackel, as *A. canina*, var. *scotica*. See *Scot. Nat.*, 289, 1888-9. Ten species and many varieties were added to the West Ross-shire flora.

Mr Sewell in the same year found *Carex saxatilis*.

1890. In the *Journal of Botany*, 39-47, 1890, I contributed some "Notes on Scotch Plants," which included several West Ross species and varieties gathered in 1889—*Draba incana*, var. *contorta*, *Fumaria capreolata*, *Arenaria Sedoides*, var. *apetala* (Slioch), *Stellaria media*, var. *major* Koch (Kinlochewe), [*Hypericum Androsaemum* (Glenelg)], *Vicia sepium* (Loch Maree), *Lathyrus pratensis*, *Rubus saxatilis* (2800 ft. on Slioch), *Prunus avium* (Glenelg), *Rosa glauca* and *R. subcristata* (Kinlochewe), *Rubus calvatus* Blox. and *R. affinis* (Kinlochewe), *Epilobium montanum* var. *minor*, *E. obscurum* × *palustre* (Kinlochewe), [*Cornus suecica* (Snill Bhain)], *Hieracium lingulatum* (2600 ft., Bey Eay; 2900 ft., Slioch), *H. holosericeum* (Ben Eay), *H. nigrescens* (*curvatum*) (Slioch), *H. alpinum* (Ben Eay), *H. globosum* (Ben Eay), *Cirsium lanceolatum* var. *nemorale* (Kinlochewe), *Achillea Millefolium* var. *lanata* (Glen Bianasdail), *Solidago Virgaurea* and var. *angustifolia* (Slioch), *Campanula rotundifolia* (Kintail), *Stachys palustris* var. *canescens* (Kinlochewe), *Myosotis repens*, *Mercurialis perennis* (Kintail), *Salix herbacea* (Ben Eay summit), *Betula pubescens* var. *parviflora* (Kinlochewe), *Sparganium affine* (2200 ft. on Slioch), *Eriophorum angustifolium* var. *minor* Koch (Slioch), var. *Vaillantianum* (Kinlochewe), *Scirpus maritimus* var. *conglobatus* (Loch Duich), *Carex paniculata* (Glen Bianasdail), *Carex Goodenowii* var. *juncea* (Kinlochewe), var. *melaena* (Ben Eay), *C. binervis* var. *nigrescens* (Bey Eay), f. *elatior* (Torridon, 4 ft. high), *C. flava* var. *oedocarpa* (Kinlochewe), *Phragmites Phragmites* var. *uniflora* (Kintail), *Holcus lanatus* (2200 ft. on Slioch), *Agrostis canina* L. var. *scotica* (up to 3000 ft., Ben Eay), *Deschampsia caespitosa* var. *argentea* S. F. Gray (*pallida*), *Agropyron repens* var. *Vaillantianum*, *Lycopodium alpinum* var., *L. Selago* var. *recurvum*, *Equisetum sylvaticum* var. *capillare* (Kinlochewe), etc.

1891. In the *Scottish Naturalist*, 186, 1891, Mr Arthur Bennett cites 17 species from the paper just mentioned as new to the flora, but five had been previously recorded, and *Drosera longifolia* and *Elymus* were not seen by me. The others are already included in the figures for 1889.

Mr A. H. Evans made a good addition in *Cladium Mariscus*.

1892. Mr Arthur Bennett sent to the *Annals of Scottish Natural History*, p. 125, 1892, on the authority of Mr P. Ewing, the names of 11 plants, including *Isoetes echinospora*, five being actual additions.

1893. Ross-shire was again visited in 1893 and a fresh area of the county was explored. I took a photographer with me so that very numerous views were obtained on the seven fine days out of the ten I was there. I noticed 480 species, of which over 70 were additions to the flora, besides 15 more or less naturalised species and a very large number of varieties. Three were verifications of old records. The vice-county list was therefore made up to over 570 species.

1894. "Contributions towards a Flora of West Ross," G. Claridge Druce, were published in the *Transactions and Proceedings of the Botanical Society of Edinburgh*, pp. 112-171, February 1894. In this paper the results of the previous work on the flora of the vice-county were brought together and a slight sketch of my own investigation was included as well as the names of the writers on the flora of the county. Raising some of the varieties there mentioned to the specific rank now given them, this paper gave 610 species, of which 47 were introduced. There was also the large number of 65 species which were either actual errors or which needed verification. Of these it was felt that about 20 might ultimately be found, therefore the total was 630 species, besides over a hundred varieties. This paper was the result of several years' work, especially of the explorations made in 1889, of which mention has been made. It included Hackel's new variety of *Agrostis canina*.

1894. A short visit was again made to more thoroughly work the Cnochan rocks and Dundonnell. The results were meagre, only 5 plants being added and 5 others verified. Considering the extent of the ground covered, this result seemed to show that the main botanical features had been exhausted.

1897. Salmon, C. E. & E. S., contributed a paper, "Notes on West Ross Plants" in the *Journal of Botany*, 347, 1897. The new records claimed were *Rubus Rogersii*, *R. villicaulis*, *Circaea intermedia*, *Hieracium graniticolum*, *H. atratum*, *H. senescens*, *H. Leyi*, *H. rubicundum* var. *Boswellii*, *H. Sommerfeltii*, *Euphrasia scotica* and *Poa Balfourii*.

1903. G. Claridge Druce. "Notes on the Flora of Western Ross-shire" in the *Annals of Scottish Natural History*, July 1903, pp. 166-175. This paper includes the plants noticed when I was the guest of Lady Fowler, when Braemore and Dundonnell forests were explored, and Beinn Dearg, An Teallach, Sgurr Mhor Fannich and other hills were climbed. This paper also includes the records of other workers. *Cerastium alpinum*, *Hieracium argenteum* (1893), *H. stenolepis*, *H. nitidum*, *Statice planifolia*, *Rhinanthus Drummond-Hayi*, *R. stenophyllus*, *R. monticola*, *Carex limosa*, *Deschampsia alpina*, *Athyrium alpestre* were discovered by me. There were 14 new records besides 4 or 5 verifications.

1910. Marshall, Rev. E. S. and W. A. Shoolbred. "Ross-shire Plants, 1909," in the *Journal of Botany*, 132, 1910. The results of two walks near the Kyle of Loch Alsh afforded *Rubus danicus*, *Matricaria inodora* var. *phaeocephala*, *Hieracium sejunctum* and *Rhinanthus apterus*.

From the years 1910 to 1924 a few records came in either from actual discovery or from the identification of plants previously gathered. Some also came from the more minute discrimination of plants and from the records of microspecies. Unless otherwise stated they are my own finds.

1912. *Utricularia ochroleuca* and *Juncus ranarius* were recorded.

1913. Two varieties, *Sagina procumbens* var. *pentamera* and *Calluna vulgaris* var. *arborescens* were identified, the latter from the Summer Islands.

1916. *Chaerefolium sylvestre* var. *angustisecta* and other varieties of *Chaerefolium* were made out.

1919. A flying visit to the county resulted in adding *Taraxacum spectabile*, *Koeleria gracilis* and *Poa irrigata* and, by Miss V. Buxton, the confirmation of *Ophioglossum*.

1920. *Orchis praetermissa* var. *pulchella* was added.

1921. A halt at the Kyle of Loch Alsh yielded *Hieracium aurantiacum*, alien of course, and *Centaurea obscura*. The latter is the old *C. nigra* L. Mr W. H. Pearsall included *Ranunculus trichophyllus*, *Drouetii*, and f. *Godronii* among the plants of the vice-county in his account of the distribution of the Batrachia in the *Report of the Botanical Exchange Club*, but the localities were actually in E. Ross.

1922. I added *Crepis capillaris* var. *anglica* and Mr Justice Talbot thought he saw *Leontodon hispidus* on the Slioch. It is desirable to confirm this.

1923. I paid a visit to Ullapool, Cnochan, etc., and added three aliens, *i.e.*, *Polygonum cuspidatum*, *P. sachalinense*, *Rhododendron*, as well as the native *Viola rupestris* var. *glabrescens*, *Thymus pycnotrichus*, *T. britannicus* and several varieties.

1924. Lady Margaret Watney found *Gnaphalium supinum* on Fannich, and I identified *Viola segetalis* and *Taraxacum naevosiforme*.

1925. Accompanied by Mr R. H. Williamson, Gairloch, Dundonnell, Ullapool and Cnochan were visited. The results were to add about 17 native and alien species and numerous varieties. The native species included *Bursa robusta*, *B. turoniensis*, *Viola lepida*, *Stellaria neglecta*, *Callitriche polymorpha*, *Galium pusillum*, *Rumex arifolius* var. (recently added to the British flora by the author), *Hieracium Lintoni*, *Hypericum humifusum*, *Taraxacum naevosum*, *Veronica Tournefortii*, *Euphrasia curta* var. *glabrescens*, *E. latifolia*, *Orchis purpurella* and *Mentha paludosa*. There was also *Senecio Jacobaea* var. *abrotanioides*, described by Dr Murr—a variety new to science.

1926. Mr J. A. Webb found *Hippuris* at Kerrydale and the alien *Hippophae* at Gairloch. In July I motored from Oxford to Loch Maree and then to Gairloch, Shieldaig, Little and Big Sands, Aultbea, Dundonnell, Braemore, Ullapool and Cnochan, a journey which resulted in the addition of about 24 native and alien species to the List besides a large number of varieties. Among the more notable finds were a new species of *Taraxacum—sublutescens*, *Cerastium semidecandrum*, *Lotus uliginosus* var., *Rubus villicaulis*, *Alchemilla pratensis*, *Hieracium scoticum*, *H. expallidiforme*, *Taraxacum brachyglossum*, *T. dilatatum*, *Gentiana septentrionalis*, *Convolvulus arvensis*, *Orchis Fuchsii*, *Carex hirta*, *Avena strigosa*, *Bursa patagonica*, a second locality for *Cladium Mariscus*; also eight aliens and the hybrid, *Senecio aquaticus* × *Jacobaea*.

1927. Further results of my 1926 visit came in. They include *Euphrasia hirtella* (new to the Scottish flora), *E. nemorosa* var. *ciliata*, *E. stricta*, *Gentiana suecica*, *Mentha Alopecuroides*, *Thymus zetlandicus*, *T. Drucei*, *T. neglectus* and *Centaurea nemoralis*.

BOTANIC EXPLORATION IN ROSS-SHIRE.

In the "Botanologia" the results of the work of the various botanists who have contributed to the flora have been detailed but it is felt that a fuller description of my own share in the work may be pardoned and incidentally, it is hoped, some idea of the beauty of the county under review may be brought out.

At Mr H. C. Watson's request I undertook to prepare a list of the common plants of West Ross as that vice-county, along with eight others, lacked this in "Topographical Botany." In the August of 1881 I made my first acquaintance with what literally proved to be a land of mountain and of flood. My first walk was through streaming rain from Auchnasheen to Kinlochewe, when I gathered *Malaxis* and noticed about a hundred plants, most of them new county records. One may say that as means of communication were then so bad I had to carry a knapsack, a vasculum, and a small drying-press with me. Two days were spent at the small inn there—a great resort of artists. Philips, the son of the Spanish painter, and H. E. Davies were then busy painting spates and highland cattle with a dexterous hand. The latter asked me the name of a plant which, he said, reminded him of "cold beef garniture." *Saxifraga Aizoides* was, of course, the answer. The inn was presided over by a real Scottish character in Margery, a rigid member of the Free Kirk, and an uncompromising upholder of the sanctity of the Sabbath. Sharp was the answer and short was the portion given to the wrong doer. Her attitude well interpreted the feeling of the district towards the wrongdoer. Two English people who had taken a cottage nearby were boycotted because they had played music, albeit it was not secular music, on the Sunday. The attendance at kirk where the Sunday service was of undue length, was compulsory, and even the collie dogs attended. However, it was my good luck to avoid the seventh day. It required some energy to go out and face the elements but that was preferable to sitting indoors and waiting for the summer sunshine that would not come except in the most fitful and momentary gleams. If it was not raining it was grey clouds and driving mist when not even the Sundews could look cheerful or the Golden Saxifrage bright. The mist and soaking showers hid Loch Maree and its grand rocky ramparts till some mighty gust rushed up the loch raising its waves till they rolled in sea-like fury, and blew back and upwards the waterfalls on Slioch, till the mountain looked as if huge peat-fires were smouldering in its corries, while the strangest contrasts of colours were seen along its slopes. Loch Maree and its margins yielded *Isoetes*, *Myriophyllum alterniflorum*, *Hydrocotyle*, *Littorella*, *Lobelia Dortmanna*, *Pinguicula lusitanica*, *Drosera obovata*, *D. anglica*, etc. On the Slioch itself botanising was very difficult. In the *Pteridium* zone one got a fresh ducking at every step, the ground, if such it may be called, being a quagmire, and the storms were too violent to allow of much rock-climbing. *Thalictrum alpinum*, *Lathyrus pratensis*, *Potentilla Sibbaldi*, *Epilobium alpinum*, *Gnaphalium sylvaticum*, *Cornus suecica*, *Arctostaphylos Uva-ursi*, *Tofieldia*, *Juncoides spicatum*, *Juncus trifidus*, *Carex vaginata*, *C. pauciflora*, *C. fulva*, *Juniperus sibirica*, *Lycopodium alpinum*, *L. Selago*, and such like plants were noted, but the summit-cliffs could not be reached. A third day was spent walking from Kinlochewe along the Torridon road, doing a little botanising on Ben Eay where I saw *Epilobium alsinifolium*, until truculent keepers turned me back. Then through the deluge I walked on by Loch Clair and Loch Coulin to Achnashellach. On the way I found *Rosa Sabini*, *Rubus Selmeri*, *Castalia alba*, *Carex remota*, *Scirpus fluitans*, etc.

"The wettest and coldest summer I can remember," said the guard of the train as wet and miserable I got out at Strome, the terminus of the West Ross-shire railway, which for the last few miles had run close by the side of Loch Carron. When we heard at Strome that this made the twenty-eighth wet day, our spirits fell nearly as low as the barometer and the expectation of revealing great treasures faded more and more. However the evening cleared a little so I was able to walk back along the railway towards Attadale, the line being constructed at the base of the cliffs which here and there have been cut through. Down these cliffs and hill-slopes in two miles twenty-one waterfalls of respectable size were counted in this wet season. By their sides ferns grew in great profusion, chiefly common ones, such as *Filix Foemina* in many varieties, *Blechnum*, *Cystopteris*, *Asplenium Adiantum-nigrum*, *Ruta-muraria*, *Trichomanes*, *Dryopteris aristata*, *Filix-mas* in many forms, *Oreop-*

teris, *Phegopteris*, *Dryopteris*, *Polystichum lobatum*, and in one place a great mass of *Hymenophyllum*. Here and there were Globe-flowers retaining, though sadly draggled, their lovely lemon petals. *Crepis paludosa*, *Scabiosa Succisa*, *Digitalis*, *Pyrus Aucuparia*, *Hieracium anglicum*, *murorum* aggregate, and *vulgatum* occurred on the rocks which were enlivened here and there with the pretty *Sedum anglicum*. Here, too, occurred *Orchis mascula*, *Asperula odorata*, and *Scilla nonscripta*, in the only locality we noticed them in the vice-county, as well as *Poa nemoralis*, *Epilobium obscurum*, *Allium ursinum*, *Viburnum Opulus*, and *Aira caryophyllea*. The shores of Loch Carron, like so many of the Ross-shire sea lochs, are most decidedly rocky and maritime rocks mean no great variety of species. The Sea-thrift is abundant and grows with some variation. *Silene maritima*, *Arenaria Peploides*, *Atriplex glabriuscula* and var. *Babingtonii*, and *Matricaria inodora*, sometimes with very large flowers, are the chief plants to grow in this shingly home, but nearer Attadale the stones become smaller and sufficiently mixed with mud to form a little salt-marsh on which are to be found *Scirpus rufus*, *Triglochin maritimum*, *Glaux*, *Cochlearia officinalis*, *Juncus Gerardi*, *Spergularia rupicola*, *S. salina* and *Dondia* (*Sueda*) *maritima*. Washed up on the shingle were beautifully coloured Echini and fine *Zostera marina*. Noting down the plants seen, it was the absences rather than the occurrences which caused surprise. Over a hundred miles had been walked before the Common Nettle was met with, and as yet *Agropyron repens*, *Crepis capillaris* and *Silene Cucubalus* had not been seen. On the railway near Strome *Arenaria serpyllifolia*, *Vicia hirsuta*, *V. sativa*, *Papaver Argomone*, *Cardamine hirsuta*, and *Brassica arvensis* were noticed, perhaps all brought to this station by the operations of man. *Arrhenatherum elatius*, *Lapsana* and *Heracleum* (the third umbellifer seen) occurred and *Iris Pseudacorus* was common here and elsewhere in the lowland areas. Many plants, such as *Galium Aparine*, *Sonchus asper* and *Arctium minus*, the commonest weeds in the south, were here pounced upon with avidity. *Anagallis tenella* was not met with, but its allies *Pinguicula lusitanica*, *Molinia*, *Drosera anglica* and *rotundifolia* and *Rhyncospora alba* were frequently found.

The two following days were very strenuous, nearly 80 miles being traversed over toilsome climbs in very bad weather. From Strome I walked over to Loch Alsh. On breasting the first hill, Connemara was forcibly brought to one's mind. It is true that here there were no beautiful bells of *Dabeocia* to gladden the eye, and that *Eriocaulon* could not be found in any of the lochs, but the black peaty soil, if soil the wet treacherous bog could be called, with its profuse growth of sombre (I refer to the general colour-effect) Bog Myrtle, Cross-leaved Heath, *Molinia*, *Drosera*, *Eriophorum*, *Carex stellulata*, *Juncus squarrosus*, *J. articulatus*, *J. sylvaticus*, *J. bulbosus* and *Nardus*, the squalid poverty of too many of its cottages, the damp relaxing atmosphere and its contiguity to the melancholy ocean were very similar to the western coast of Ireland. Like too were the frequent inlets of the sea into the coast-line and the fucus-covered rocks with the large shingly border. But the spiky Cuchullins, now coming into view, had a grandeur of their own. Between Loch Alsh and Loch Duich some interesting ground occurred and *Petasites*, *Carex canescens*, *C. dioica*, *C. pulicaris*, *Botrychium*, *Potentilla palustris*, *Oenanthe crocata* were noted. Here then came on a drenching rain which in Ireland would be called one of St Patrick's blessings, but was here attributed to some malevolent agency, yet there are advantages in such a downfall. One is that when you are quite wet through you hesitate less about wading knee-deep in swampy places after *Sparganium minimum*, *Utricularia intermedia*, *Pedicularis palustris*, or *Menyanthes*. There is some consolation too when you get on to the hard road again and the clouds have swept past, kissing the tops of Scuir Ouran and Ben Attow, those guardian monarchs of Kintail and Glen Shiel, that every step you take brings you dryer and nearer to them. Another advantage is that if there had been no wind one would have been devoured by midges or stung by clegs. At Dornie a little ferry-boat takes one across the lovely Loch Duich passing near Ellandonan Castle to the south-west side of the Loch. On the walk to Mam Ratachan, *Scirpus sylvaticus*, *Bartsia Odontites*, a single example of *Chaerophyllum temulum* and, in a garden, *Lamium purpureum*, were found and the dainty *Capnoides claviculata* was seen on the roofs of some cottages. Climbing up a mile or so of the Ratachan pass we met with *Oxyria* and *Botrychium* and what was probably *Carex rupestris*. This I verified years after on the Cnochan rocks. *Saxifraga Aizoides*, here, as generally in the county, was abundant. We then went on to Glen Shiel which at that time boasted a comfortable inn, soon after closed in order, so one heard, to make still more secluded that enormous area of deer-forest which an all too selfish American millionaire had acquired to be kept sacred against the invasion of the nature lover. In 1881, however, the portals of the inn were still open and (although I had to share a room) a high-tea and a warm fire did much to soothe one's ruffled nerves. As the clouds lifted in the evening there was all the glory of Glen Shiel and Kintail before me, and just in front Scuir Ouran, a huge hill of over 3500 ft. rose within a few feet of the sea-level almost without a break, certainly without a perceptible break, to its grand rocky coronet. What monarch was there near to rival it? What scene more wild than the glen to which it formed so fine an ornament? The opposite side of Glen Shiel was not less abruptly steep, even if lower in elevation but, instead of separating into distinct hills, it formed rather a finely broken crest of fantastic outline, like some rocky reef against which only the waves of mist and showers broke from time to time. At the glen's head a burn came tumbling down in rapid violence, here, however, not surrounded with bosky foliage but amid bare rocky surroundings, the whole glen being almost destitute of trees except by the river where some dark Alders added little to its loveliness and the few Birches were too small and scattered to be readily distinguished from the screes on which they grew. The influence of Scuir Ouran was so magnetic that, even after a long twenty-mile walk, one was drawn to attempt its ascent, so I struggled over the two or three miles of as rough and sloppy a walk as a traveller could object to. At Glascharn came the climb through the *Pteridium* zone, as wet as the rain forests of the African falls, then the *Oreopteris* zone with *Carex binervis*, and up and up. Would the rocks never end? Sterile as they were, *Deschampsia flexuosa* var. *montana*, *Juncoides multiflorum* var. *congestum*, *Cystopteris*, the Parsley fern, mountain forms of *Dryopteris aristata*, the accursed *Juncus squarrosus*, so aptly invented to trip one up, and delicate forms of the Oak fern were detected. But these oases were few and far between as the sheep had nibbled off everything less digestible than heather stems. Climbing until one can look over the summits which, seen from below, attempted to rival the kingly Scuir but now fall into their proper places of mere courtier-like attention the shoulders of our monarch adorned with epaulets of *Gnaphalium supinum*, *Juncoides spicatum*, *Carex concolor* (*rigida*) and *Juncus trifidus*, were reached. These plants continue nearly to the summit. The mountains crown, unsullied with any Rigi decorations, consists of huge blocks of stone, some few of which are piled up to form a cairn from which no finer view could be desired. Below stretched Glen Shiel in all its stern grandeur, rising into the wonderful barrier-ridge whose points and precipices now assumed new and more wonderful slopes. Behind other hatchet-ridges in all their wonderful serratures stretched between here and Loch Hourn where mountains of intense ruggedness were thickly congregated. To the south Ben Nevis in all his lumpy massiveness was plainly seen. To the west the Cuchullins of Skye were tossing up their rocky peaks into the glory of the sunset which changed them in colour from time to time. To the north-east Ben Attow, a strange shaped hill with sharp ridges and furrowed sides, seemed close enough to be within a stone's throw. This extraordinary clear atmospheric condition, alas, boded bad for the morrow, but to-night was welcomed since it brought into close focus the mass of Kintail summits. Farther away, in Eastern Ross, was the far stretching Ben Wyvis whose ten-mile ascent is so wearisome if not uninteresting. Perhaps it was the eastern view that was most attractive at this evening hour when all the beauty of that too-seldom seen sun was casting its vivid light into the hundred glens and ravines, almost unknown to the ordinary traveller, that lay stretched out in puzzling mazes, watered by the Affrick, the Beauly, the Findhorn, the Elchaig, and the Farrar. The view stretched away beyond all Nairnshire to Forres, the monument of which was distinctly visible one is almost afraid to say how many miles away. But the clouds on the western ridge are hanging more closely than before. Now streaks are spreading across the sky and a colder temperature is felt as these ghostly wreathes pass by. Loch Alsh is deepening into purple, although Shiel, above Loch Duich, is still flung a flaming orange banner on a lucid olive green sky. So not satiated, but filled with complete satisfaction, the mountain glory is reluctantly abandoned before the gloom is fully felt. The stiff descent, scarcely less fatiguing than the upward climb, is begun, but before it is completed the clouds have lowered themselves, Glen Shiel is darkened, Loch Duich is slate-coloured rather than purple but Ouran, shaking itself free from the clouds which have entangled themselves on the lower hills, shines out clear in all its rocky grandeur—true monarch of the scene.

The next day was to be another red-letter day for I was going to see the Falls of Glomach, the highest in Britain. So, despite the fatigue of yesterday, it was an early rise and a hearty breakfast—for who could tell when or where the next meal would be. Was not the morning pleasant after the torrential rain of the night, where every plant was hung with jewelled drops and the little streams were fretting themselves in foamy tears over the rocks that impeded their course. The fragrant peat reek gave a homely touch as it rose from the *Capnoides*-covered roofs of thatch. Here in Kintail grew in a little stream far away from habitation the spotted-flowered form of *Mimulus guttatus*. The morning was too bright to last, and down came the enemy ere we were five miles from the inn. When the last house of the glen—the keeper's lodge—was reached, as my map was entirely untrustworthy, mountains being put in the wrong place or omitted, I found I had to ask my way. Doleful indeed was the news. The river was in spate; it would not be safe to cross it; the way was so intricate I should not be able to find it; there was no chance of meeting anyone to enquire; I ought to have brought a guide; to be alone was risky—however, the way was so and so. So on I went, feet and legs soon getting soaked in the wet bogs while intrusive incursions into one's shoulders promised soon to subjugate the whole. When the river was reached the stepping stones were under a rushing stream. There were no boulders near enough to jump and I had no stick to assist me. Removing some of my garments I stepped into the fierce cold current, clutching my clothes with one hand and with the other grasping at boulders to avoid imitating *Oxyria* which had been washed down from the heights above. The unpleasant passage made, I was soon again plodding up the glen which, like Shiel, had a steep slope breaking into a rocky crest at the top with fissures and multitudinous ravines. Here was little phaenogamous vegetation but there grew mosses, including *Splachnum sphaericum*, while *Saxifraga stellaris* and *Oxyria* spoke of the heights above. On to the head of the glen and turning eastwards, after about three miles' walking, I reached an elevated plateau of green sward consisting of *Juncus squarrosus*, *Scirpus caespitosus* and *Deschampsia caespitosa*, which was bounded to the south by A Glasbheinn from which a few streams came brawling down, bringing some Hieracia which had been badly eaten off. Following up some of these gullies to about 3000 ft. one was rewarded by *Saxifraga hypnoides*, *Epilobium alpinum*, *Cochlearia alpina*, *Vaccinium uliginosum* (it was the earliest find of the plant afterwards identified as var. *pubescens* Hornem.), *Arenaria Sedoides*, *Hieracium chrysanthum*, *Thalictrum alpinum*, *Juncus triglumis*, *Saussurea*, *Carex concolor*, *Saxifraga oppositifolia*, and *Silene acaulis*. Here, too, grew, in a very sheltered gully, a large flowered form of *Pinguicula vulgaris* which Dr Boswell identified as the Irish *grandiflora*. It, however, appears to me an intermediate best put under *P. vulgaris* var.

alpicola Reichb. I have never seen anything like it elsewhere in Britain. In the valley below a river in full flood was rushing along and, following it, a short walk brought me to the verge of a wonderful gorge. Here were the Falls of Glomach, the highest in Great Britain as, in one plunge, there is a drop of 370 feet, of which 300 feet are in view, while the stream itself is forty feet broad. The falls are made by a bifurcated stream, one branch coming from a hill forming the watershed of W. Ross and Inverness, named by some one who had plenty of time on his hands, Sgurr nan Ceathracamhnan, 3771 feet in altitude. The other feeder comes from Loch Bhealaich about 1250 feet above sea level, which is fed by a stream rising on Beinn Fhada at over 3500 feet. As the river was in spate, a marvellous scene presented itself. The water from the great height was changed into spray which ever and anon was swept upwards by the wind and glistened into iridescence as the sun momentarily broke through the clouds. As it was still raining, the whole scene was arched over by a glorious rainbow. The rocks surrounding the fall are singularly precipitous. There are at least 700 feet of dark forbidding sternness, showing only here and there on some ledge, as one peered over clinging fast to the stem of a mountain ash on the brink of the chasm, a few plants of *Geranium sylvaticum* (seen nowhere else in the county), *Solidago*, *Sedum roseum*, and a few hawkweeds. The prevailing feature is barren loneliness. The view down the gorge towards Elchaig has the same character so, compared with other falls such as Foyer, Moness, or Bruar, it yields to them in the wooded cliffs, hung with ferns, mosses and lichens, which give them a soft beauty, yet the sterner grandeur of these mural precipices, the barreness of the environments and the almost absolute loneliness and sense of isolation felt by the observer, all tend to give these Falls of Glomach the greatest impressiveness.

It had been my intention to descend to Glen Elchaig, fording the streams, and so wend my way back to Elchaig, but that, with the flooded stream, was now out of the question, so the route to Kintail had to be retraced. The river, forded without any undressing as the degrees of wet mattered not, I set out on the long walk to Dornie along the eastern side of Loch Duich, where *Hieracium crocatum* was picked. There one had hoped to sleep, but a travelling tinker, having bespoken half the solitary bed, and as everything else was repulsive, after a boiled egg and a cup of tea I set out during the raging storm in complete darkness on the twelve mile walk to Strome Ferry. It was a very tired individual who, after tumbling into some Highland cattle on the roadway, succeeded in arousing the hotel people about midnight. After this long day's exertion I was too tired and feverish even to sleep.

(The above account appeared in *Science Gossip*.)

Six years after, in 1887, West Ross was again visited, but the midges and rain soon drove me away. On this visit the Slioch, Ben Eay and Torridon were explored. As usual the shooting people were curmudgeous and absolutely forbade permission to climb Ben Eay. As the mist was dense and a soft rain was falling, I walked up the Torridon road, armed with umbrella and waterproof, sauntering as if for a constitutional. This road was raked by the telescopes of the keepers, but at a bridge over a stream I dropped into the gully and, leaving my impedimenta behind under the bridge, I waded up the stream until well sheltered by the mist. In this way I got on to the white quartzite ridge which leads to the summit. On this ridge an *Agrostis* was gathered which led one to hope that it might be *rubra*. Another visit, however, decided it was a new form of *canina*, which Prof. Hackel named var. *scotica*. Here, too, were *Arabis petraea*, *Polystichum Lonchitis* and several Hieracia new to the county—*H. tenellum*, *H. curvatum*, *H. holosericeum*, *H. lingulatum*, etc. *Arctostaphylos alpina* grew on bare shoulders, and *Salix herbacea* on the summit. Just below, at the top of a corrie, I came very near to the splendid herd of deer, but I was not sorry when they scented me and galloped off into another shooting, owned, one trusted, by a less churlish tenant. Despite the mist I was enabled to strike the right ridge—these ridges are narrow and awkward—and found my way back into safety. The climb of the Slioch was again rendered nugatory owing to the storm and rain, only *Sparganium angustifolium* and *Carex xanthocarpa* being found. The Liathaich, a curious hill with very steep sides formed of alternate cliffs of quartzite and Torridon sandstone, was barren in the extreme, nor was the coast of Torridon Loch more productive. The result of the visit was to make 29 additions to the flora.

In 1889 Kinlochewe was again visited in order to clear up the question of the *Agrostis*. The Slioch was also found to produce it in considerable quantity, as well as *Arenaria Sedoides* at a low elevation. On Ben Eay, which was again climbed under unnecessary difficulties owing to its being a deer forest, *Hieracium alpinum*, *H. eximium*, etc., were found. Torridon was also explored and afforded a *Viola* which was named *sabulosa*. Since then it has been referred to *Pesneaui*. Gleann Bianasdail, which leads to the wild Lochan Fada, afforded *Carex paniculata*. Ten species in all were added to the list.

The year 1893 again saw me in Ross but much earlier in the year, *i.e.*, the end of June. Very different ground was traversed, the route being from Garve which I reached by the mid-day train. The post-machine took me to Ullapool over the Dirie moor. On this occasion I had a photographer with me who obtained about 150 plates for lantern views. It was so cold as we drove over the Dirie moor with rain as biting as sleet in our face that, despite or because of our being packed like herrings in a barrel on the long journey—for we did not reach Ullapool till 8 p.m.—so cold and stiff was I, I had to be lifted down from my perilous eminence on the outside seat. We were greeted with a warm welcome, and an appetising odour of fried herrings. After a few days one would have been content if that fish had never been created. Such are the vagaries of a Scottish climate that next day we woke to an unclouded sun and an almost unendurable heat. This brought out the clegs and the midges in myriads. One of the former got his sucker well into the ear of my photographer causing a severe swelling and making him delirious, so he was off his work for a couple of days. Hot as it was I walked up to Braemore to see its magnificent gorge and falls where *Hieracium sparsifolium* was obtained. There are many Rubi by Loch Broom, including, among others, *mucronatus*, *fissus*, *radula*, *incurvatus*, *nessensis*, *pyramidalis*, *Schmeri* and *macrophyllus*. The Roses, too, are interesting.

The next day was too hot to do anything except to get into a boat and prowl about, but we saw *Elymus arenarius* and the glabrous-fruited variety of *Sisymbrium officinale*, quite common on the boulevard. The plant called *Cochlearia groenlandica*, now named by me *scotica*, was seen on the shingle with *Spergularia media* and *Fumaria confusa*, at first thought to be *Boraei*. The cultivated crofters' fields had the yellow-flowered form of *Raphanus Raphanistrum* and immense quantities of *Spergula sativa* which in the warm evening give out a most powerful valerianaceous odour. Whenever I notice it now the odour brings back to my memory in vivid clearness the long parallel strips of crofters' fields which border Loch Broom like carpets. Another day was occupied in exploring the River Ullapool which, at some distance from the port on the way to Loch Achall, cuts its way through limestone rocks where grew *Habenaria viridis*, *Orchis mascula*, *Gentiana Amarella*, *Anthyllis*, *Melica nutans*, *Avena pubescens*, *Listera ovata*, *L. cordata*, *Habenaria albida*, *Pyrola secunda* and *Hieracium iricum*, a real oasis in the desert of the scanty flora of the prevailing strata of the county. Then, as my photographer was still a little groggy, we sailed by the Summer Isles to a stretch of sand beach near Polglass where *Carex arenaria*, *Ligusticum*, *Agropyron junceum* and *Daucus Carota* grew. So varying is the climate here that whereas, on the previous evening, Loch Broom had not a ripple on it, and as one rowed towards the opposite shore a duck with its numerous offspring—dark spots in a rose-coloured sea—made ripples which stretched arrow-shaped for a couple of hundred yards, to-day, on reaching the Summer Isles, the waves were decidedly choppy. At Polglass, where the inhabitants are so far away from the medical man that they mostly die a natural death, seeing I was gathering plants it was assumed that I must know something about medicine. So one had to suggest remedies for asthma, rheumatism, and other ills. To one poor sufferer in the pangs of angina—who had last seen a doctor in November and seemed to be very near entering the grim portals, I promised a remedy. These delays allowed time for the storm to get up and we had a very narrow escape of being swamped as we crossed the first bay. The next was too much for the navigators so we beached the boat and walked back from Ardmair. Near Ullapool and Loch Achmair *Hieracium reticulatum*, *H. rubicundiforme* and *H. psuedo-auratum* were culled. From the Loch *Lobelia*, *Callitriche intermedia* and *Chara fragilis* were dredged. Then came a very toilsome journey to climb the magnificent mountain, An Teallach, perhaps, taking it all in all, one of the most imposing mountains in the whole of Scotland. Rising from the sea-level to 3483 feet it has magnificent corries in which the snow lingers till late summer. We ferried over Loch Broom and climbed the moorland road by Loch na h'Airbhe, in which grew *Ranunculus petiolaris* and *Carex inflata*, descending to Dundonnell where *Habenaria virescens* was found in the pastures near the shooting lodge. We then ascended the Glas Mheal Mor and the shoulder of An Teallach but the rain and mist prevented the summit being reached. Our highest altitude was 3000 feet. On it we gathered *Hieracium lingulatum*, *Epilobium alpinum*, *Vaccinium uliginosum*, *Salix herbacea*, *Rubus Chamaemorus* and *Arctostaphylos alpina*. On our way back *Rubus pyramidalis* and *R. fissus* were seen. By the time we reached Loch Broom the rain had cleared off and the passage across the loch was one of rare beauty, the rippleless sea reflecting all the colours of a magnificent sunset. About Ullapool we also noted *Oenanthe crocata*, *Coronopus*, *Buda media*, *Aegopodium*, etc.

Our next stopping place was Strathcarron at the head of the loch of that name. Here we found *Ruppia*, *Scirpus rufus*, *Salicornia*, *Carex extensa*, *C. Oederi*, and in the cornfields *Viola segetalis* and *Spergularia rubra*. On the shingly river margin grew *Galium verum*, *Silene maritima*, *Lepidium Smithii*, *Anthyllis*, *Hieracium pseudo-auratum* and *H. duriceps*. *Rumex longifolius* and *R. Arnottii* Druce (*conspersus* auct.) were gathered near the railway station with *Galium erectum*, probably introduced with grass-seed. *Viola Curtisii* also occurred in grassy places, here some distance from the sea. On the shingle near Jeantown were *Caucalis Anthriscus*, *Malva sylvestris*, *Volvulus sepium*, *Arctium nemorosum* and several garden stragglers, if indeed the *Volvulus* and *Malva* do not belong to that category. In a picturesque ravine near Jeantown we saw *Osmunda*, *Allium ursinum*, *Bromus ramosus*, *Brachypodium sylvaticum*, *Agropyron caninum*, *Asplenium viride*, *Polystichum lobatum*, *Potentilla sterilis*, etc.

An extremely hot day was occupied in climbing a mountain north of the Strath but we found it very bare and the plants dried up. At the low elevation of 1000 feet *Juncus trifidus* occurred with a large form of *Salix herbacea* and *Hieracium lingulatum*. On a bare shoulder, burnt by the sun to tinder, were *Loiseleuria* and *Arctostaphylos alpina*. At the base of the hill *Scirpus fluitans* and *Chara delicatula* grew in a pool. Another visit to Jeantown afforded *Stachys ambigua*, thus confirming the record made in "English Botany" of 1809. Its assumed parents, *S. palustris* and *S. sylvatica*, grew with it. Another day was spent in walking from Strathcarron to Jeantown and thence over the hill to Kishorn. A violent storm of thunder and rain was our unwelcome companion, as we went over the celebrated pass, Beallach-nam-bo, 2050 feet high, which lies between Meal Gorm and Sgurr-na-Caorach and the still loftier Beinn Ban, 2886 feet. A sharp descent takes one to Applecross where, bordering the sea, is a curious limestone pavement. In the interstices of the slabs grew *Sagina nodosa* and *Epilobium parviflorum*. *Rubus corylifolius* was common on the clay and close by our bedroom window grew *Equisetum maximum*. A small fresh-water loch near the sea contained *Castalia alba*, *Utricularia major* and *minor*, *Potamogeton* *natans*, *Scirpus lacustris*, *Carex inflata*, *Veronica scutellata* and *Subularia* at perhaps its lowest elevation. On the coast and shingle were *Atriplex glabriuscula*, *Agropyron junceum*, *Sedum acre*, *Erophila verna*, *Cerastium tetrandrum* and *Geranium dissectum*. The woods afforded *Hieracium corymbosum* and white-fruited raspberries. *Rosa caesia* (*coriifolia*), *R. glauca* and *R. subcristata* also occurred.

Our return journey over the Beallach, with a diversion to the bordering hills, afforded *Thalictrum alpinum*, *Juncus trifidus*, *J. triglumis*, *Saxifraga hypnoides*, *Saussurea*, *Sedum roseum*, *Hieracium ciliatum*, *Gnaphalium supinum*, *Silene acaulis*, *Juncoides spicatum* and *Cryptogramma crispa*. In a pool at the top of the pass, 2050 feet, grew *Subularia*, *Isoetes lacustris* var. *falcata* and *Callitriche intermedia*. By Loch Kishorn was *Scirpus maritimus* and on the limestone about Kishorn were *Hieracium iricum*, *Habenaria Gymnadenia*, *Phyllitis Scolopendrium*, *Salix repens* and its hybrid ×*S. ambigua*, *Veronica Anagallis* variety, *Festuca elatior*, etc. Beneath Courthill House there was a brilliant band visible for some miles of the yellow flowers of *Hypochaeris radicata*. In this visit to Ross-shire of ten days, seven were rainless, but the preceding drought had been prejudicial to vegetation. This is one of the characters of the area. The constantly heavy rainfall and the very intractable rock, which weathers slowly, result in so much of the good soil being washed out that when a short drought occurs vegetation quickly dries up and sedges and grasses soon go over.

In 1894 a short visit was paid to Ullapool at the end of June. This visit was again marked by extreme heat following directly upon a very backward season. My object was to explore the limestone rocks which Lightfoot called "Cregach no caen upon the boundaries of Coygach and Assynt, just on the confines of Ross-shire, on the road to Led-beg." On the geological-map, No. 101, the limestone rocks are marked as thinning out before the Ross boundary is touched, on the hill which is there called Cnoc an t'sasunnaich (phonetically Cnochan), 1258 feet high. It has a fine range of exposed cliffs on the north-western side. The high road to Inchnadamph runs at their base at an elevation of 700-800 feet above sea-level. On the Sutherland salient the limestone comes down to 400 feet or less and the river near Ledbeg in Sutherland runs in a white marble bed. The drive from Ullapool to Inchnadamph is one of the finest and most interesting in Britain. It is bordered on one side by a magnificent series of hills beginning in Ross with the stony sterile Ben More Coigach, then outside Ross come Cul Mor, Cul Beag, An Stack, Stack Polly, Suilven, Canisp, Meal Garbh and Quinaig, each well-formed and well-isolated hills of distinct and striking outline which in favourable weather take on most beautiful tints and often merge in the far distance into glorious cobalt-blue. Near the head of the road above Inchnadamph rises the rocky crest of Ben More of Assynt at the base of which and stretching westwards along Loch Assynt is a great extent of limestone cliffs extremely rich in vegetation. *Carex rupestris*, *Arenaria norvegica*, *Orchis O'Kellyi*, *Helleborine atropurpurea*, *Galium pumilum* and *Dryas* are among the most interesting plants. It was to find out which, if any, of these plants came into Ross that my visit was made. That it was probable some of them did was evidenced by the occurrence of *Dryas* on the Ross side of the boundary. Above the fucoid beds in Ross is the limestone and many of the Sutherland specialities (but not *Arenaria norvegica* or *Helleborine* so far) have been found. *Carex rupestris* does occur and *Draba incana* and *Adoxa* sparingly. *Epilobium angustifolium*, *Allium ursinum*, *Thalictrum alpinum*, *Polygonum viviparum*, *Polystichum Lonchitis*, *Asplenium viride*, *Dryopteris* and *Phegopteris*, *Alchemilla pratensis* and *alpestris*, *Rubus saxatilis* (whose flowers are hawthorn scented), *Carex pilulifera* and *Poa irrigata* were all seen. Here, too, I had the privilege of capturing a young Golden Eagle which appeared to be injured as he refused to move. So putting the velvet focussing-cloth over him, he was brought to Ullapool. After a night's rest he woke up in a demoniacal frenzy—the glutton had only been gorged. He lived there, in captivity I am sorry to say, for many years. Another visit was paid to Dundonnell to search for *Corallorrhiza* and *Goodyera* in Lightfoot's habitats but I could find no trace of either. Much alteration and clearing have gone on since 1776. There is some fine scenery about Dundonnell and some remarkable gorges and chasms. Additional localities were obtained for *Festuca sylvatica*, *Asperula*, *Carex remota*, *C. pallescens*, *Allium ursinum*, and there were masses of *Juncoides sylvaticum*. In a swampy shady place by a roadside *Caltha radicans* grew in some plenty. A day spent on An Teallach was not very productive, the season being backward, the ground barren, and the clegs venomous. *Lycopodium annotinum*, *L. alpinum* var., *Arctostaphylos alpina* rather frequent, *Statice planifolia*, *Carex concolor*, *Vaccinium uliginosum* in flower, *Sedum roseum*, *Rubus Chamaemorus*, *Cornus suecica* and *Loiseleuria* were noted, among others. A Sabbath walk to Rhidorroch by Loch Achall yielded little that was new except *Sagina subulata* which occurred in the shingle path to the lodge. *Habenaria albida*, *H. bifolia* and *Orchis incarnata* were got on the limestone. The housekeeper at the lodge, when we asked permission to go over a small rickety bridge, said "yes, but you should not be walking on the Sabbath." The bridge, she added, was quite safe because her son had built it. Having made our exploration we were recrossing it when one of the rungs gave way and I narrowly missed a baddish fall. However the old lady came out and offered us some tea. In chatting with her it appeared that she was a cousin of our Kinlochewe Margery and, like her, was well brought up in the puritan tradition. She herself came from Polglass. Asking her if she knew a Mrs Robert Maclean of that place and if she were still alive (she was my angina patient for whom I had wired for some nitroglycerine tabloids the year before) she said, "Oh, yes!" Was she not very ill last year? "Yes," she replied, "but an English gentleman sent her some 'sweeties' which had cured her." My photographer then said, pointing to me, that this was the gentleman who had sent them. Then probably my Sunday non-observances were pardoned. The incident afforded one of the many curious coincidences of life. Strome was then explored and between the station and Plockton, *Capnoides*, *Rubus rhamnifolius, Myosotis repens, Hypericum Androsaemum* and even *Oxyria* were noted. But the heat was most trying. A furious forest fire had been raging for several days and did great damage. About five new species and five confirmatory records were the meagre results of my journey.

In 1923, with Mrs Wedgwood, I motored from Garve to Ullapool and thence along the road under the Cnochan rocks to Ledmore. *Castalia occidentalis, Viola rupestris* var. *glabrescens, Orchis praetermissa* × *maculata* were gathered.

In 1925 Mr H. Williamson and I motored from Achnasheen to Gairloch finding on our way *Hypericum humifusum* in Glen Docharty, *Hippophae, Atropa,* etc., and at Gairloch on the sand-dunes and the adjoining rocks *Ligusticum* quite native, *Hieracium Lintoni,* and nearer Gruinard *Orchis purpurella.* Ullapool and the Cnochan rocks were again explored when *Stellaria neglecta, Taraxacum naevosum, Euphrasia latifolia* and *Hieracium rivale* were found. The route we took was by Poolewe, near which *Callitriche polymorpha* occurred, Gruinard, Dundonnell, Braemore and Ullapool to Cnochan. At the head of Little Loch Broom and on the moors above there seemed to be much ground deserving careful search. Accordingly in 1926 I motored from Oxford to Loch Maree in magnificent weather and from that place examined the islands on the loch. They afforded *Melampyrum pratensis, Oxalis* in great quantity, and *Hieracium crocatum*, but the memory of poor John Talbot who, with all the world at his feet died there from Botulin poisoning, saddened one's thoughts. Some species were added to the list, including *Veronica Tournefortii* and *Convolvulus arvensis*, but both are aliens there. From Loch Maree to Gairloch the road passes through scenery of great beauty with Ben Eay and Ben Alligin, hills of fine outline, as prominent objects. The dunes of Gairloch were once more explored but I could find not a trace of *Thalictrum marinum. Anthyllis* was not rare, and *Hieracium Pilosella* var. *nigrescens, Sisymbrium Thalianum, Rubus villicaulis, Petasites, Hieracium expallidiforme, Taraxacum sublutescens* (nova species). *T. brachyglossum, Euphrasia hirtella* (new to Scotland), *Plantago Coronopus,* and *Aira caryophyllea* were found. *Mimulus moschatus, Gaultheria,* several planted willows, *Pyrus Aria* and *P. intermedia* were among the aliens seen. The extensive dunes of Big Sands and Little Sands, which deserve further search, yielded several species, including *Cerastium semidecandrum, Sagina nodosa, Viola variata* and *lepida, Lotus uliginosus, Daucus Carota, Festuca arenaria, Gentiana suecica, Orchis incarnata* var. *pulchrior*, etc. An interesting expedition was taken to Port Henderson whence a glorious view was obtained of the Cuchullins of Skye. *Osmunda* grew in a fine ravine and near Port Henderson we gathered *Dryopteris aemula.* In Kerrydale and the adjoining moor there was excellent *Carex limosa.* A small pond gave *Utricularia ochroleuca, Sparganium minimum, Castalia* and *Cladium Mariscus* in its second Ross-shire locality. Hereabouts grew *Eriophorum paniculatum, Drosera obovata* and *Carex lasiocarpa.* The unusually dry weather allowed one to get on to bogs rarely traversed. The island of

Longa seemed worth a visit but it proved very barren, *Euphrasia foulaensis*, *E. borealis*, *Dryopteris aemula*, true *Orchis maculata*, *Carex arenaria* var. *remota* being the sparse contribution. On the adjoining coast grew *Lycopus* and *Scutellaria galericulata* var. *littoralis*. Many adventives, chiefly of hortal origin, were found at Strath. We drove along to Poolewe where *Humulus* and *Polygonum polystachyum* are naturalised, and where *Cochlearia scotica* is most abundant on the wet shingle.

Aultbea was our next stopping place. Here a small marsh had *Scirpus maritimus* var. *monostachys*, *Aster Tripolium*, *Ruppia* and *Scirpus rufus*. Mellon Charles, which was worked from Aultbea, has also considerable sands, with sufficient amount of comminuted shells to give the calcareous soil in which *Draba incana* likes to grow. Here it was very diminutive. *Orchis Fuchsii*, *Habenaria viridis*, *Campanula rotundifolia*, *Galium verum*, *Viola lepida*, *Gentiana septentrionalis* also were present and *Euphrasia borealis*, *E. Rostkoviana*, *Viola variata*, *Mentha arvensis* var. *austriaca* were also found. The sand dunes at Gruinard were not productive, but in one place *Agropyron Hackelii* occurred, though we could see nothing of *A. junceum* which is supposed to be one of its parents. Some wet ground near Laid had hybrids of the marsh orchids *O. maculata* × *O. praetermissa* var. *pulchella*. Beyond Dundonnell, on the road to Garve, which leads through a very striking defile beyond An Teallach, *Trientalis* in small examples was seen near Meallant Sithe, and on a bridge near Braemore *Poa nemoralis*, a rare plant in West Ross. But the glories of Braemore have departed and so have the former owners. What poignant memories were recalled of those two gallant boys, John and Allan, who laid down their lives in the war, and of their beloved mother who did so much to investigate the flora of her neighbourhood and to make happy the people around her. By them she was greatly beloved and when her house was left unto her desolate they intensely sympathised with her in her grief, rendered more bitter by the unnecessary troubles and annoyances she had to bear. Now the Braemore gorge is bereft of its arboreal beauty and of other things as well. Our homeward way led by Ullapool and Cnochan to Inchnadamph.

CONSTITUTION OF FLORA.

The *West Ross Flora* is constituted as follows:—

Native Species, ...	542	
Species of *Bursa* 5, *Rubus* 18, *Rosa* 8, *Hieracium* 39, *Taraxacum* 8, *Euphrasia* 11, *Thymus* 5, ...	94	
		636
Colonists and Denizens, ...		57
Aliens or Adventives, ...		76
		769
Doubtful, ...		40
		809

Varieties and Hybrids,	222
Errors,	9

These may be arranged into various groups.

Alpines, of which 13 are Hieracia. Of these about 12 descend to lower levels,		64
Ericetal, Heath and Moorland species, found on wet or well drained soils, of which 11 are Euphrasias and 5 are Thymes,		87
Lacustral, Uliginal and Paludal, of which 13 are floating or submerged,		131
Halophytes, of which 12 are dunal (19 other species are almost limited to sand dunes),	12	
Shingle, rock or marsh plants,	29	
		41
Sylvestral or shade loving, of which 19 are Rubi, and 11 are Rosae,		107
Aberrant plants, not confined to any of these groups, including also pascual and rupestral species, of which 27 are Hieracia and 8 are Taraxaca,		153
Colonists or agrestals,		57
Ruderal or wayside plants, or those connected with man and his operations,		56
Adventitious plants either directly introduced or occurring as escapes from cultivation,		73
Plants, the occurrence of which needs confirmation,		40
		809

It must be made clear that comparatively few species can be absolutely limited to one only of these groups, *e.g.*, *Viola Riviniana*, classed as Ericetal, might equally be put in the Sylvestrals, and as both lowland and alpine. *Oxalis* is another example. *Cornus suecica* might be classed with the alpines; *Cirsium palustre* with Sylvestrals or Uliginals. *Ranunculus acer*, *Cerastium vulgatum* and many others are mesophytic. Another class—Rupestrals—might be taken from the alpines or lowland plants. *Carex stellulata* and some other Carices are perhaps equally Uliginal. *Trollius* is scarcely more alpine than *Lychnis dioica*, and *Draba incana* grows on sea-sand as well as on mountain-cliffs. *Oxyria* and *Alchemilla alpina* are washed down by mountain streams to low levels, and *Carex rupestris* and the Holly Fern grow at low altitudes on the Cnochan rocks. Contrariwise, at high elevations, on mountain corries, may be found *Angelica*, *Solidago*, *Lychnis dioica*, *Rumex Acetosa*, *Poa pratensis*, *Festuca rubra*, *Juncoides sylvaticum* and many sedges and ferns.

The ALPINE SPECIES, including 13 Hieracia, number 64. Some of these, *i.e.*, *Thalictrum alpinum*, *Trollius*, *Draba incana* (dunal), *Geranium sylvaticum*, *Saxifraga Aizoides*, *S. stellaris*, *Rubus saxatilis*, *Sedum roseum* (sea cliffs), *Circaea alpina*, *Rumex arifolius*, *Carex rupestris* and *Polystichum Lonchitis* descend below 1000 feet. The majority of the Alpines are Rupestral, growing on wet or dry rocks, but a few are Uliginal, *i.e.*, *Rubus Chamaemorus*, *Vaccinium uliginosum*, *Betula nana*, *Juncus triglumis*, *Carex saxatilis*, *C. vaginata*, while others as *Arctostaphyllos alpina* and *Loisleuria* are Ericetals. The Rupestral Alpines include *Arabis petraea*, *Cerastium Cerastoides*, *C. alpinum*, *Silene acaulis*, *Arenaria Sedoides*, *Potentilla Sibbaldi*, *Saxifraga oppositifolia*, *S. Hypnoides*, *Gnaphalium supinum*, *Saussurea*, the 13 Hieracia, *Statice planifolia*, *Rumex arifolius*, *Salix lapponum*, *S. herbacea*, *Carex concolor*, *Cryptogramma*, *Athyrium alpestre*, etc.

The ERICETAL GROUP, Heathy and Moorland Species, including plants found in wet or dry places with 11 Euphrasias and 5 Thymes, number about 87, but the definitions of the group are not sharp. Among the dry soil plants are *Polygala serpyllifolium*, *Stellaria graminea*, *Linum catharticum*, *Cytisus*, *Lathyrus montanus*, *Potentilla erecta*, *Galium hercynicum*, *Antennaria*, *Solidago*, *Gnaphalium sylvaticum*, *Hieracium Pilosella*, *Arctostaphylos Uva-ursi*, *Vaccinium Myrtillus*, *V. Vitis-idaea*, *Calluna*, *Erica cinerea*, *Pyrola media*, *P. minor*, *Veronica officinalis*, about 5 Euphrasiae, *Thymus* (5 species), *Teucrium Scorodonia*, *Rumex Acetosella*, *Salix repens*, *Empetrum*, *Juncus squarrosus*, *Juncoides campestre*, *Carex binervis*, *C. pilulifera*, *C. leporina*, *Anthoxanthum*, *Agrostis canina*, *Aira praecox*, *Deschampsia flexuosa*, *Holcus mollis*, *H. lanatus*, *Festuca ovina*, *F. capillata*. *Nardus*, *Eupteris*, *Dryopteris Oreopteris*, *Lycopodium clavatum*, *L. Selago*. Among the wet loving species are *Scabiosa Succisa*, *Cirsium palustre*, *Erica Tetralix*, *Euphrasia scotica*, *E. micrantha*, *Pedicularis sylvatica*, *Myrica*, *Orchis maculata*, *Juncoides multiflorum*, *Scirpus caespitosus*, *Carex pulicaris*, *Molinia*, *Equisetum sylvaticum*, *Blechnum*, etc.

LACUSTRAL, PALUDAL AND ULIGINAL SPECIES, Floating or Submerged. Examples of Paludal species:—*Ranunculus Flammula*, *Caltha palustris*, *C. radicans*, *Radicula Nasturtium*, *Lychnis Flos-cuculi*, *Stellaria Alsine*, *Spiraea Ulmaria*, *Epilobium palustre*, *Oenanthe crocata*, *Galium palustre*, *Senecio aquaticus*, *Petasites*, *Crepis paludosa*, *Taraxacum paludosum*, *Myosotis palustris*, *M. caespitosa*, *M. repens*, *Veronica scutellata*, *V. Beccabunga*, *V. Anagallis*, *Mentha aquatica*, *Scutellaria galericulata*, *Polygonum Hydropiper*, *Iris Pseudacorus*, *Juncus conglomeratus*, *J. effusus*, *J. acutiflorus*, *J. articulatus*, *J. bufonius*, *Orchis praetermissa*, *O. incarnata*, *Eleocharis palustris*, *Scirpus lacustris*, *S. pauciflorus*, *S. setaceus*, *Mariscus*, *Carex lasiocarpa*, *C. flava*, *Phalaris arundinacea*, *Alopecurus geniculatus*, *Phragmites*, *Glyceria fluitans*, *Equisetum maximum*, *E. limosum*, etc. The Uliginal examples include:—*Viola palustris*, *Potentilla palustris*, *Drosera* (3 species), *Hydrocotyle*, *Galium uliginosum*, *Oxycoccus*, *Menyanthes*, *Pedicularis palustris*, *Pinguicula vulgaris* *P. lusitanica*, *Malaxis*, *Narthecium*, *Tofieldia* (also Alpine), *Juncus bulbosus*, *Triglochin*, *Eleocharis multicaulis*, *Scirpus pauciflorus*, *Ryncho-*

spora, Schoenus, Eriophorum vaginatum, E. paniculatum, E. angustifolium, Carex inflata, C. fulva, C. flava, C. panicea, C. limosa, C. stellulata, C. canescens, C. pauciflora, C. dioica and *Lycopodium inundatum.* The Submerged or Floating species include *Nymphaea lutea, Castalia alba, Subularia, Hippuris, Myriophyllum alterniflorum, M. spicatum, Callitriche* (4 species), *Lobelia, Utricularia* (4 species), *Littorella, Polygonum amphibium, Sparganium* (4 species), *Lemna minor, Potamogeton* (3 species), *Isoetes* (2 species), *Nitella opaca* and *Chara* (4 species).

HALOPHYTES, Dunal, Shingle and Salt Marsh. Examples of Dunal species:—*Thalictrum marinum, Viola Curtisii, V. Pesneaui, Cerastium tetrandrum, Rosa spinosissima, Ligusticum scoticum* (also Rupestral), *Volvulus Soldanella, Gentiana septentrionalis, Plantago Coronopus, Carex arenaria, Ammophila, Agropyron junceum* and *Elymus.* Dry Shingle species:—*Pneumaria, Lathyrus maritimus, Sagina maritima, Matricaria phaeocephala, Statice pubescens, Atriplex glabriuscula, Spergularia rupicola, Salsola, Dondia maritima, Arenaria Peploides, Asplenium marinum* and *Silene maritima* (also montane). Marsh and Wet Shingle species:—*Cochlearia officinalis, C. scotica, Spergularia media, S. salina, Aster Tripolium, Glaux, Plantago maritima* (also montane). *Salicornia* (2 species), *Juncus Gerardi, Triglochin maritimum, Scirpus rufus, Carex distans, C. extensa, Zostera* and *Glyceria maritima.* The foreshore also offers in great quantity:—*Rumex crispus, Atriplex patula, Potentilla Anserina, Galium Aparine, Agropyron repens* and, less frequently, *Atriplex hastata, Sonchus arvensis* and *Urtica dioica.*

The SYLVESTRAL or Plants giving or needing shade, of which 19 are Rubi and 11 Rosae, include:—*Anemone nemorosa* (often on open cliffs), *Stellaria Holostea, Hypericum Androsaemum, Ilex, Vicia sylvatica* (sea cliffs), *V. sepium, Pyrus Aucuparia, Crataegus, Epilobium obscurum, Sanicula, Conopodium* (cliffs), *Hedera, Adoxa* (cliffs), *Viburnum Opulus, Lonicera Peri-clymenum* (in gullies in Zetland), *Primula vulgaris* (sea and mountain cliffs), *Asperula odorata, Valeriana sambucifolia* (river gorges), *Scrophularia nodosa, Ulmus montana, Quercus Robur, Q. sessiliflora, Alnus, Salix Caprea, S. cinerea, S. aurita* (also heath), *Populus tremula* (cliffs), *Listera ovata, Cephalanthera longifolia, Scilla Nonscripta* (also cliffs), *Juncoides sylvaticum, Carex sylvatica, C. pallescens, C. remota, Melica nutans, Poa nemoralis, Festuca gigantea, F. sylvatica, Brachypodium sylvaticum, Agropyron caninum. Pinus, Phyllitis, Polystichum lobatum, Dryopteris austriaca, D. aristata, D. Phegopteris, D. Dryopteris, Cystopteris* and *Hymenophyllum.*

ABERRANT PLANTS include those which are commonly distributed or grow in pastures or on natural grassy ground to which they are not confined, or those which fail to come into any special group. These include, besides 27 Hieracia and 8 Taraxaea. *Ranunculus repens, R. acer, Cerastium vulgatum. C. viscosum. Lychnis dioica, Lepidium Smithii, Trifolium pratense, T. repens, Potentilla Anserina, Geum rivale, Epilobium montanum, E. parviflorum, Achillea Ptarmica, A. Millefolium, Hypochaeris, Leontodon autumnalis, Bellis, Tussilago, Cirsium lanceolatum, C. heterophyllum, Myosotis versicolor, Rhinanthus Crista-galli,* *R. stenophyllus*, *Digitalis*, *Lycopus*, *Prunella*, *Stachys palustris*, *Plantago lanceolata*, *Alopecurus pratensis*, *Agrostis alba*, *Festuca ovina*, *F. rubra*, *F. arundinacea*, *F. elatior*, *Poa trivialis*, *P. pratensis*, *P. annua*, *Bromus hordeaceus*, *Equisetum arvense* and *Dryopteris Filix-mas*. Some of these are Rupestral or rock-loving, including 27 Hieracia, *Erophila*, *Sedum anglicum*, *Juniperus communis*, *J. sibirica*, *Asplenium Trichomanes*, *A. viride*, *A. Ruta-muraria*, *A. septentrionalis*, *Blechnum* and *Dryopteris aemula*. Some definitely love limestone soils—*Polygala vulgaris*, *Anthyllis*, *Dryas*, *Galium pumilum*, *Gentiana Amarella*, *G. campestre*, *G. baltica*, *Habenaria albida*, *H. viridis*, *Avena pubescens*, *Sesleria*, *Festuca supina*, *Asplenium viride*, *Galium boreale* and *Selaginella* (damp places). Some prefer sandy detritus—*Arenaria serpyllifolia*, *Teesdalea*, *Viola Lejeunei*, *V. variata*, *Galium boreale*, *Achillea Millefolium*, *Myosotis versicolor*, *M. collina* and *Carex hirta*. Others rejoice on sea and mountain cliffs—*Cochlearia officinalis*, *Silene maritima*, *Lychnis dioica*, *Geum rivale*, *Sedum anglicum*, *Epilobium angustifolium*, *Angelica*, *Ligusticum*, *Statice pubescens*, *Solidago*, *Matricaria inodora*, *Heracleum Sphondylium*, *Orchis mascula* and *Festuca rubra*. On turfy ground grow—*Radiola*, *Alchemilla arvensis*, *A. minor*, *Veronica arvensis*, *Habenaria virescens*, *H. bifolia*, *Cynosurus*, *Botrychium*, *Ophioglossum* and *Festuca Bromoides*. *Polygonum viviparum* likes spongy grass slopes or wet rock ledges, as do *Carex dioica* and *Thalictrum alpinum*.

The Agrestal Species or Colonists, some of which are only ephemeral. Examples:—*Papaver* (3 species), *Fumaria* (2 species), *Brassica arvensis*, *B. alba*, *Raphanus*, *Viola segetalis*, *Silene angustifolia*, *Lychnis alba*, *L. Githago*, *Geranium dissectum*, *Vicia hirsuta*, *V. angustifolia*, *Medicago lupulina*, *Trifolium dubium*, *T. procumbens*, *Scandix*, *Aethusa*, *Sherardia*, *Scabiosa arvensis*, *Cichorium*, *Centaurea Cyanus*, *Lycopsis*, *Convolvulus arvensis*, *Veronica* (4 species), *Rhinanthus major*, *Mentha arvensis*, *Stachys arvensis*, *Galeopsis Tetrahit*, *G. speciosa*, *Lamium* (3 species), *Scleranthus*, *Chenopodium album*, *Polygonum Convolvulus*, *P. scabrum*, *Euphorbia Helioscopia*, *E. Peplus* and *Bromus secalinus*.

Ruderal or Wayside Plants, associated with man and his operations, but some may be native. Examples:—*Barbarea*, *Sisymbrium officinale*, *Bursa* (6 species), *Coronopus*, *Spergularia rubra*, *Malva sylevstris*, *Geum urbanum* (?), *Chaerophyllum temulentum*, *Chaerofolium sylvestre*, *Heracleum*, *Caucalis Anthriscus*, *Sambucus nigra*, *Chrysanthemum Leucanthemum*, *Artemisia vulgaris*, *Senecio Jacobea*, *S. vulgaris*, *S. sylvaticus*, *Arctium* (2 species), *Cirsium* (2 species), *Centaurea nigra*, *Lapsana*, *Crepis capillaris*, *Sonchus* (3 species), *Ligusticum*, *Myosotis arvensis*, *Plantago major*, *Polygonum* (3 species), *Rumex* (4 species), *Urtica* (2 species), *Arrhenatherum* (2 species), *Dactylis*, *Lolium perenne*, *Bromus hordeaceus* and *Agropyron repens*.

The Adventive and Alien Species are plants which occur as outcasts or escapes from gardens. Such are:—*Aconitum anglicum*, *Hesperis*, *Malva moschata*, *Hypericum calycinum*, *Vicia sativa*, *Spiraea salicifolia*, *Cotoneaster Simonsii*, *Ribes Grossularia*, *R. nigrum*, *R. rubrum*, *Aegopodium*, *Myrrhis*, *Sambucus racemosa*, *Anaphalis*, *Chrysanthemum Parthenium*, *Doronicum*, *Calendula*, *Artemisia Absinthium*, *Hieracium aurantiacum*, *Campanula Rapunculoides*, *Gaultheria*, *Rhododendron*, *Anchusa sempervirens*, *Volvulus sepium*, *Atropa*, *Linaria Linaria*, *L. Cymbalaria*, *Mimulus moschatus*, *M. guttatus*, *Mentha Alopecuroides*, *M. spicata*, *M. piperita*, *Chenopodium Bonus-Henricus*, *Polygonum Polystachyum*, *P. cuspidatum*, *P. sachalinense*, *Humulus*, *Tritonia*, etc.

Many trees have been planted—*Acer Pseudo-platanus*, *Tilia* (2 species), *Pyrus Aria*, *P. intermedia*, *Prunus* (3 species). *Hippophae*, *Ulmus hollandica*, *U. sativa*, *Castanea*, *Fagus*, *Salix* (8 species), *Populus* (2 species) and *Larix*. Some plants have been brought in with seed-corn or grasses, such as *Matricaria suaveolens* and *Cirsium arvense*. *Avena strigosa*, *A. sativa* and *Lolium italicum* are escapes or relics of agricultural operations.

The 38 doubtful species include—*Ranunculus bulbosus*, *R. Lingua*, *R. aquatilis*, *Arabis hirsuta*, *Cochlearia danica*, *C. anglica*, *Coronopus didymus*, *Hypericum perforatum*, *Geranium sanguineum*, *Prunus Cerasus*, *Chrysosplenium alternifolium*, *Sedum purpureum*, *Callitriche verna*, *Cicuta*, *Apium nodiflorum*, *Crithmum*, *Meum*, *Oenanthe Lachenalii*, *Linnaea*, *Valeriana dioica*, *Arctium majus*, *Carduus nutans*, *Leontodon hispidus*, *Symphytum officinale*, *Scrophularia aquatica*, *Melampyram sylvaticum*, *Mentha longifolia*, *Salix Andersoniana*, *Orchis latifolia*, *Ophrys muscifera*, *Allium oleraceum*, *Juncus diffusus*, *Potamogeton nitens*, *P. lucens*, *Carex riparia*, *C. vesicaria*, *Phleum arenarium*, *Catabrosa*, *Poa alpina*, and need confirmation.

The actual errors are—*Draba rupestris*, *Potentilla reptans*, *P. argentea*, *Crepis tectorum*, *Cervicina*, *Nepeta Cataria*, *Chenopodium murale*, *C. urbicum*, *Salix reticulata* and *Herminium*.

As compared with the West Ross List of 692 species, Zetland has 456, and Oxfordshire 1061. The Adventives in Ross number 73, in Zetland 73, and in Oxfordshire 450, showing how great is the influence of a more densely populated area. Ross-shire has no species peculiar to it, nor indeed has it any very rare plant.

Callitriche polymorpha may have a wider distribution than is now known. Nor do there appear any examples of Endemism, even of varietal grade. *Arctostaphylos alpina* is one of the noticeable plants, and *Juncoides arcuatum* is found at lower levels than on the eastern mountains of Aberdeenshire.

One is led to hope that *Arabis alpina*, *Saxifraga nivalis*, *Gnaphalium norvegicum* (in East Ross), *Carex irrigua* and *C. atrata* may yet be added to the Flora, while special search should be made for *Pinguicula alpina*, now, alas, extinct in East Ross.

Politically the Isle of Harris is in West Ross-shire, but in this account its plants are not included since Watson puts Harris in the Outer Hebrides. It has no special plant except the very doubtful ×*Carex spiculosa*, which I was unable to refind last year, and the very rare *Nitella batrachosperma*, which was once found near Obbe (Leverborough).

ADDENDA.

44/1. EROPHILA VERNA (L.) Meyer.
Var. KROCKERI A. & G. Gairloch, *Druce*.

59/12. BURSA GROSSA (E. At.).
Gairloch, *Druce*.

199/2. ALCHEMILLA PRATENSIS Schmidt.
Native. Grassy and rocky places. Rare. P. July-August.
First found by the author in 1926.
Cnochan Rocks.

419/23. Add Cul Mhor, *W. D. Miller*.

809/1. KOELERIA GRACILIS Pers.
Native. Lowland. Dry grassy places. Rare. P. July-August.
First found by the author in 1919.
Cnochan Rocks.

CORRIGENDA.

p. 84. Line 6. For Jack. read Jacq.

Flora of West Ross.

1. *RANUNCULACEAE.*

2. THALICTRUM [Tourn.] L.

2/3. T. MARINUM. *Dune Meadow Rue.*
T. dunense Dum., auct. br. *T. minus*, var. *maritimum* Syme.
Native. Lowland. Sand dunes. Very rare. P. July-August.
First record: *C. Bailey* in *Rep. Bot. Rec. Club*, 1883.
On the sands at Gairloch, *Bailey*. My repeated searches here and at Big and Little Sand have been unavailing.

2/5. T. ALPINUM L. *Alpine Meadow Rue.*
Native. Wet alpine rocks. Local. July. 500-2800 ft.
First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.* 144, 1843.
Beinn a Mhuinidh, *Salmon*. Base of cliff, Loch Maree, *Graham*. Shore of Loch Garbhaig below Slioch, *Sir G. Talbot*. Meall Gorm. Sgurr na Cearach. Sgurr Fhuaran. Beallach nam bo. An Teallach. Beinn Liath Mhor. Beinn Alligin. Beinn Dearg. Fucoid rocks of Cnochan.

3. ANEMONE [Tourn.] L.

3/2. A. NEMOROSA L. *Wood Anemone.*
Native. Grassy places and woodlands. Local. P. June-July.
First record: the author.
Loch Maree. Dundonnell. Cnochan. Flowerdale, etc. From sea-level to 2000 ft.

6. RANUNCULUS [Tourn.] L.

6/2. R. REPENS L. *Creeping Buttercup.*
Native. Grassy and stony places. Not common. Ascends to over 2000 ft. P. June-August.
First record: the author in *Rep. Bot. Rec. Club*, 1881. A smaller, more cleanly cut plant, occurs at Ullapool, Glen Docharty and Strathcarron.

6/3. R. ACER L. *Buttercup, Crowfoot.*
Native. Grassy places, shingles, mountain cliffs and dunes. Common. Ascending to 3300 ft. P. June-September.
First record: the author, *l.c.*, 1881.
Var. MULTIFIDUS DC. Side of Loch Maree.
Var. TOMOPHYLLUS (Jord.). Ullapool. Strathcarron. Applecross. Gairloch.
Var. BORAEANUS (Jord.). Braemore.

[6/5. R. BULBOSUS L. *Buttercup.*
Gairloch, *J. H. Dixon*, but not corroborated. The plant from Loch Broom, so named, was *repens*. It is likely to occur as it is in Westerness and West Sutherland.]

[6/6. R. LINGUA L. *Great Spearwort.*
Kintail; Gairloch, not uncommon, *A. Davidson* in *Scot. Nat.* 74. 1873. The large form of *R. Flammula* was probably mistaken for it. No corroboration. It occurs in Easterness and E. Ross.]

6/7. R. FLAMMULA L. *Creeping Spearwort.*
Native. Frequent and variable. In marshes, shallow streams and on loch-sides, etc. Usually lowland, but ascends to 2500 ft. P. June-August.
First record: the author, *l.c.*, 1881.
Var. ANGUSTIFOLIUS Wallr. (*radicans* Nolte = *pseudoreptans* Syme). Margins of Loch Maree. Big Sand. Loch Luichart. Loch Clair.
Var. PETIOLARIS Lange. (*scoticus* Marsh.). Probably only an extreme form of *Flammula*.
Native. In the water of loch margins. Not uncommon and widely distributed, 50-2800 ft. P. July-September.
First record: the author, 1893.
Loch Achall, 265 ft. Loch na h'Airbhe 700 ft. Hill-loch, Strathcarron, 2800 ft. Achiltibuie. Glen Docharty. Aultbea. Mellon Charles. Anfheoir Loch, etc.

6/32. R. HEDERACEUS L. *Ivy-leaved Water-Crowfoot.*
Native. Lowland. Watery places. Rare. P. June-July.
First record: *J. H. Dixon*, 1886.
Gairloch, *Dixon*. Strathcarron, *S. M. MacVicar*, 1904.

6/33. R. FICARIA L. *Pilewort.*
Native. Lowland. Banks and shady places. Local. P. June.
First record: the author, *l.c.*, 1881.
Attadale, 1881. Foich Woods, *Lady Fowler*. Dundonnell.

[R. AQUATILIS L. Gairloch, *J. H. Dixon*, 1886.
Needs verification. *R. peltatus*, *R. trichophyllus* and *R. Drouetii* have been found by the author in East Ross.]

7. CALTHA [Tourn.] L.

7/1. C. PALUSTRIS L. *Marsh Marigold.*
Native. Marshes and wet places. Common and variable. P. June-July.
First record: the author, *l.c.*, 1881.
Var. MINOR (Mill.) DC.
Summit of Beinn Fiadha, *H. N. Dixon*. An Teallach, 2000 ft. Beinn Dearg, 2500 ft. Ascends as the var. to 3300 ft.

7/2. C. RADICANS Forst.
Native. Lowland. Burn margins. Rare. P. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Near Little Loch Broom.

8. TROLLIUS L.

8/1. T. EUROPAEUS L. *Globe Flower.*
Native. Damp meadows and wet cliffs. Local. P. July-August.
First definite record: the author, *l.c.*, 1881. (Unlocalised, *A. Davidson* in *Scot. Nat.* 74, 1873.)
Strathcarron, 2000 ft. Cnochan rocks. An Teallach. Mam Ratachan.

14. ACONITUM [Tourn.] L.

*14/1. A. ANGLICUM Stapf. *Aconite.*
Alien. On the side of a deserted garden between Shieldaig and Jeantown, *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843 (see *Cyb. Brit.* i. 98, 1847), as *A. Napellus* L.

2. *BERBERIDACEAE.*

17. BERBERIS L.

*17/1. B. VULGARIS L. *Barberry.*
Alien, as a planted shrub. P. July.
First record: *J. H. Dixon*, 1886.
Gairloch, *Dixon*. Ullapool. Braemore.

19. NYMPHAEA L.

19/1. N. LUTEA L. *Yellow Water Lily.*
Native. Very rare (possible *minima*). P. July.
Loch Coulin.
Not given for Westerness, East Ross or Sutherland.

20. CASTALIA Salisb.

20/1. C. ALBA Woods. *White Water Lily.*
Native. Local in the lochs. P. July.
First record: the author, *l.c.*, 1881, as *Nymphaea alba.*
Achiltibuie, *S. Buxton* and *Hon. Mrs R. McKenna.* Loch Maree, *Mr Justice Talbot.* Lochan na la Caoile. Loch Coulin. Loch a Mhuilinn, 1893. Loch Anfheoir. Drum.
Var. OCCIDENTALIS (Ostenf.).
Near Loch Tollie. Perhaps some of the foregoing records belong here.

4. *PAPAVERACEAE.*

21. PAPAVER [Tourn.] L.

*21/1. P. SOMNIFERUM L. *Garden Poppy.*
Alien. A garden escape. A. June-July.
First record: the author, 1893.
Shingle, Jeantown. Applecross. Kyle of Loch Alsh, *J. A. Webb*, 1923.

*21/2. P. RHOEAS L. *Red Poppy.*
Alien. Very rare, only given by *J. H. Dixon* in the Gairloch List, 1886.

*21/3. P. DUBIUM L. *Pale Red Poppy.*
Colonist. Lowland. Cultivated ground. Very rare. A. July.
First record: the author.
Kinlochewe. Ullapool. Kyle of Loch Alsh. Gairloch, *J. H. Dixon*, 1886.

*21/4. P. LECOQII Lam.
Colonist. Lowland. Cultivated ground. Very rare. A. July.
First found by the author at Dornie in 1881.

*21/5. P. ARGEMONE L. *Long-headed Poppy.*
Colonist. Lowland. Waste ground. Very rare. A. July.
First record: the author, 1881.
Side of railway, Strome.

31. CAPNOIDES [Tourn.] Mill.

31/1. C. CLAVICULATA Dr. (*Corydalis*).
Native. Cottage roofs. Local. A. July.
First record: *A. Davidson* in *Scot. Nat.*, 1873.
Melvaig; near Gairloch, *Davidson*. Balmacara, *Wallis*, 1910. Braemore. Elphin, *Lady Fowler*. East of Kyle of Loch Alsh, *Marshall* and *Shoolbred*, 1910. Kintail. Between Strome Ferry and Plockton.

32. FUMARIA [Tourn.] L.

32/9. F. BASTARDI Bor.
F. confusa Bast.
Colonist. Waste ground. Rare. A. July.
First record: the author, as *Boraei*, 1893.
Ullapool, 1880. J. H. Dixon's *capreolata* may have been this.

32/10. F. OFFICINALIS L. *Fumitory.*
Colonist. Lowland. Cultivated ground. Rare. A. June.
First record: the author, 1893.
Ullapool. Dundonnell.

6. *CRUCIFERAE.*

35. RADICULA [Dill.] Hill.

35/1. R. NASTURTIUM Druce. *Water Cress.*
Nasturtium officinale Br.
Native. Runnels and watery places. Local. P. June-July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Ullapool. Applecross.

36. BARBAREA Br.

36/3. B. BARBAREA (L.) Druce. *Winter Cress.*
B. vulgaris Br. *B. lyrata* Asch.
Doubtful native. Roadsides. Rare. B. July.

First record: the author, *l.c.*, 1881.
Gairloch. *J. H. Dixon.* Strome.

37. ARABIS L.

37/1. A. HIRSUTA Br.
?Native.
Gairloch, *J. H. Dixon.*
Will probably be found but needs confirmation. It occurs in Skye, E. Ross, Sutherland and Inverness.

37/5. A. PETRAEA Lam.
Native. Alpine rocks, 2000-2800 ft. Local. P. July-August.
First record: the author, 1887.
Ben Eay, on the quartzite slopes, from 2000-2800 ft. Beinn Alligin. Torridon. Darach. *Canon Vaughan*, 2000 ft. Gairloch, *Davidson.*
The flowers are not so large as those of the plants on Ben Loyal or Ben Laiogh.

39. CARDAMINE L.

39/1. C. PRATENSIS L. *Cuckoo Flower.*
Native. Marshy ground in the lowlands but reaches 2500 ft., wet moorlands, etc. Common. P. June-July.
First record: the author, *l.c.*, 1881.
The common plant is the *C. palustris* Peterm., *E.B.*, t. 776, with stalked leaflets and purplish-lilac flowers, Big Sand, etc. The plant with white flowers and sessile leaflets, *C. pratensis* Fl. Danica, n. 1639. 1790. Applecross. Loch Droma, etc.

39/4. C. FLEXUOSA With.
C. sylvatica Link.
Native. Not uncommon in damp shady gullies, etc. Ascends to 2500 ft. A., B. or P. June-August.
First record: the author, *l.c.*, 1881.
Jeantown. Kintail. Strome. Ullapool. Applecross. Inverbroom. Gairloch. Cnochan. Plockton.
Var. UMBROSA Gren. & Godr. Jeantown, by the waterfall.

39/5. C. HIRSUTA L. *Hairy Bitter Cress.*
Native. Mainly lowland. Bare shingly places, garden ground, etc. Not rare. A. June-August.
First record: the author, *l.c.*, 1881.
Lochcarron. Glen Docharty. A common garden weed at Loch Maree. Applecross. Kyle of Loch Alsh. Ullapool. Inverbroom. Gairloch. Flowerdale.

43. DRABA L.

[D. RUPESTRIS Br. Ben Sleugach, Loch Maree. *Davidson*, *l.c.*, 1873. Probably a mistake for *incana.*]

43/3. D. INCANA L.

Native. Limestone rocks and calcareous shell sand, ascending to 2500 ft. Local. June-July.

First record: *Lightfoot's Flora Scotica*, 1777.

Cregach na Caen. Near Ledbeg. *Lightfoot.* Still there 1926. Slioch, *Mr Justice Talbot.* Mellon Charles on sea-sand, very minute, 1926.

44. EROPHILA DC.

44/1. E. VERNA (L.) Meyer. *Vernal Whitlow Grass.*

Native. Probably common as it is an early flowering species. Local. A. April-May.

First record: the author, 1887, as var. *Krockeri* A. & G.

Gairloch, *J. H. Dixon.* Shieldaig. Kinlochewe. Applecross, 1913.

Var. OEDOCARPA (Drabble). Inverbroom. *Lady Fowler.*

45. COCHLEARIA L.

45/2. C. OFFICINALIS L. *Scurvy Grass.*

Native. On the small shingle of the coast. B. or P. June-August.

First record: the author, *l.c.*, 1881.

Coigach, *Miss Field*, 1912. Gairloch. Aultbea. Shieldaig.

45/3. C. ALPINA Watson. *Alpine Scurvy Grass.*

Native. Wet alpine rocks. Ascends to 2500 ft. Local. B. or P. July.

First record: the author, 1881.

Slioch, *Mr Justice Talbot.* A Glas Beine. Sgurr na Carran. An Teallach.

[45/5. C. ANGLICA L.

Gairloch, *J. H. Dixon.*

Needs confirmation although recorded for Inverness, Sutherland and East Ross. It needs a muddy habitat.]

45/6. C. SCOTICA Druce.

C. groenlandica auct. br. non L.

Native. Wet close sand or small coast shingle. B. or P. June-August.

First found by the author, 1893.

Gairloch. Ullapool. Inverbroom. Poolewe, abundant, and a feature of the coast.

There seems to be little doubt that this is distinct from the Linnean plant. *Scotica* is found in Inverness and Sutherland.

[45/7. C. DANICA L.

Gairloch, *J. H. Dixon.* Recorded for Caithness, E. Ross, and Sutherland.]

47. HESPERIS L.

*47/2. H. MATRONALIS L. *Dame's Violet.*

Alien. About the ruins of a kirk near Jeantown, but of garden origin, 1887.

49. SISYMBRIUM L.

49/6. S. officinale (L.) Scop. *Hedge Mustard.*
Native. Lowland. Waste places. Local. P. July.
First record: the author, 1887.
Jeantown.
Var. leiocarpum DC. On shingle at Ullapool.

49/7. S. Thalianum Gay. *Thale Cress.*
Native or Colonist. Garden ground, waste places. Rare. A. June-July.
First record: *J. H. Dixon*, Gairloch, 1886.
Gairloch, *Dixon*. Flowerdale, 1926.

[S. Alliaria is recorded for East Ross.]

53. SUBULARIA L.

53/1. S. aquatica L. *Awlwort.*
Native. Fresh water lochs. Local. P. June-July.
First record: Loch Carran, *Mr Stuart* in *Stokes With. Nat. Arr.* ii., 467, 1787.
Loch Garbhaig, 1000 ft., *Mr Justice Talbot*. Lochan Feith-an-Leothaid. Gleann-na-Muice, *Salmon*. Small loch at summit of Beallach nam bo, 2000 ft. Loch a Mhuilinn. From near sea level to 2000 ft. on the Beallach.

54. BRASSICA [Tourn.] L.

*54/2. B. Napus L. *Rape or Cole.*
Alien. Weed of cultivation in cultivated or waste ground. A. or B.
Jeantown, on shingle, the author, 1887.

54/14. B. arvensis Kunze. *Charlock.*
Colonist. Lowland. Cultivated ground and waste places. A. July-August.
First record: the author, 1881.
Kinlochewe. Strome, 1881, as *B. Sinapistrum*. Aultbea.

54/15. B. alba Boiss. *White Mustard*
Colonist. Lowland. Cultivated ground. A. July-August.
First record: the author, 1881.
Loch Alsh. Ullapool. Applecross. Little Sand. Big Sand. Kinlochewe

59. BURSA Weber.
(*Capsella* Med.)

59/1. B. pastoris Weber. *Shepherd's Purse.*
Native. Rather common and widely distributed in the lowlands. A May-August.
First record: the author, 1881.
Very variable being composed of many micromorphs.

59/3. B. anglica (E. At.).
Kyle of Loch Alsh, 1928.

59/12. B. ROBUSTA (E. At.).
First British record: see *Rep. B.E.C.*, 765. 1925.
Gairloch.

59/20. B. PATAGONICA (E. At.).
Strath, 1925. Flowerdale.

59/25. B. SINUOSA (E. At.).
Big Sand, 1925.

59/27. B. TURONIENSIS (E. At.).
Loch Maree. Flowerdale. Ullapool, 1925.

60. CORONOPUS [Rupp.] Mill.

60/2. C. CORONOPUS (L.) Dr. *Swine's Cress.*
C. procumbens Gil.
Native. Grassy margins of lochs. Very rare. A. or B. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Loch Broom near Ullapool.

[C. DIDYMA Sm. Gairloch, *J. H. Dixon*. Very doubtful although recorded for E. Ross.]

61. LEPIDIUM L.

61/7. L. SMITHII Hook.
L. heterophyllum. var. *canescens* (G. & G.).
Native. Lowland. Stony places, river shingle, etc. B. or P. July.
First record: *A. Davidson*, *l.c.*, 1887.
Shores of Loch Torridon. Gairloch. Kyle. Side of Loch Maree. Stony bank of River Carron, *Davidson*.

66. TEESDALIA R. Br.

66/1. T. NUDICAULIS Br.
Native. On river shingle. Very rare. A. June-July.
First record: *Lady Fowler*, 1907.
On river shingle at Inverbroom, *Lady Fowler*.
Also found in E. Ross.

77. CAKILE [L.] Mill.

77/1. C. CAKILE (L.) Karst.
C. maritima Scop.
Native. Sandy coasts and sea rocks. Very local. A. July.
First record: *J. H. Dixon*, 1886.
Gairloch, *Dixon*.

80. RAPHANUS [Tourn.] L.

*80/1. R. RAPHANISTRUM L. *Wild Radish.*
Colonist. Cultivated ground. Locally common. A. June-August.
First record: the author, 1887.
Abundant in oat crops at Dundonnell. Applecross. Ullapool, always as the var. *flavus* Druce. Melvaig. Mellon Charles.

10. *VIOLACEAE.*

88. VIOLA [Tourn.] L.

88/4. V. Riviniana Reichb. *Dog Violet.*
Native. Heaths and grassy places. Ascends to 2000 ft. Common. P. June-August.
This is probably the *canina* of the Applecross and Gairloch Lists.
First certain record: the author, *l.c.*, 1881.
Braemore. Dundonnell. Loch Maree. Flowerdale. Fannich. Applecross. Melvaig.

88/5. V. rupestris Schmidt. var. glaberrima Beck.
Native. Rocky places. Rare. P. June-July.
First found by the author in 1923 on the Cnochan rocks.
Var. glabrescens Beck. Cnochan rocks. the author. 1923.
×canina = ×V. Heslopii Dr. Cnochan rocks. See *Rep. B.E.C.*, 865. 1925.

88/6. V. canina L. *Dog Violet.*
Native. Lowland. Grassy places and sand dunes. Rare. P. June-July.
First recorded by the author in *Journ. Bot.* 481, 1899.
Side of River Carron. Little Sand. Mellon Charles. Gairloch.

88/11. V. palustris L. *Marsh Violet.*
Native. Common in boggy ground. P. June-July.
First record: the author, 1881.
Braemore. Strath Carron. Applecross. Kinlochewe.
Ascends to 2500 ft. on An Teallach.

88/15. V. variata Jord. *Wild Pansy.*
Native. Local on sand dunes. A. or B. July.
First record: the author, 1926.
Big Sand.

88/31. V. lepida Jord. *Wild Pansy.*
Native. Sand dunes and dry pastures. Local. A. or B. June-July.
First record: the author, 1926.
Mellon Charles. Little Sand. Gruinard. Marshall and Shoolbred (*Journ. Bot.*, 132, 1910) recorded it from Achilty Inn. ? v.-c. 106, E. Ross. This may be the *V. tricolor* of *Lady Fowler's* from Inverbroom and *Miss Field's* from Coigach and my own *tricolor*, p.p. of 1886.

*88/23. V. segetalis Jord. *Wild Pansy.*
Colonist. Corn crops. Local. A. or B. July.
First record: the author. See *Tr. Bot. Soc. Ed.*, 1894.
Strathcarron. It is probably the aggregate *V. arvensis* as at Ullapool and Torridon recorded in 1887.

88/33. V. lutea Huds. *Mountain Pansy.*
Native. Pastures. Rare. B. June-July.
First record: the author. 1893.
Braemore.

Var. amoena Hensl.
By Carron River, W. A. *Shoolbred* in *Journ. Bot.*, 481, 1899. I have some doubt about this. It may be the following species.

88/34. V. Curtisii Forst.
Native. Grassy places. Rare. P. July.
First record: *Rev. H. E. Fox*, 1885, as *lutea*.
Strathcarron.

88/35. V. Pesneaui Jord. *Pansy.*
Native. Sandy places near coast. Local. B. June-July.
First record: the author, 1889, as *sabulosa*.
Strathcarron. Loch Torridon side. Applecross. Little Sand. Big Sand. Gairloch.

11. *POLYGALACEAE.*

89. POLYGALA [Tourn.] L.

89/1. P. serpyllifolium Hose. *Milkwort.*
P. depressa Wend. *P. serpyllacea* Weihe.
Native. Common, and widely distributed in heathy places on acid soils. P. June-August.
First record: the author, 1881, as *P. serpyllacea*.

89/2. P. vulgare L.
Native. Local, but widely spread in grassy places especially on basic soils. P. June-August.
First record: the author, 1881.
Sgurr Fhuaran. Sgurr na Caorach. Cnochan Rocks. Big Sand. Beinn Dearg. Mellon Charles. Gairloch.
Ascends to over 2000 ft.
Var. Ballii Ostenfeld. A lowland limestone plant with profuse blue flowers. Ullapool. Cnochan.

13. *CARYOPHYLLACEAE.*

96. SILENE L.

96/1. S. maritima With. *Sea Campion.*
Native. Sea shingles. Rather common. P. June-August.
First record: the author, 1881.
On the shingly shores of Loch Maree. Strathcarron, 1893. Gairloch. Ullapool. Mellon Charles. Aultbea. Inverbroom.

*96/2. S. angustifolia S. & T. *Bladder Campion.*
S. Cucubalus Wib. *S. inflata* Sm.
Colonist or Casual. Waste places. P. July.
First record: the author, 1881, as *S. Cucubalus*.
Strome Ferry.

96/8. S. acaulis L. *Moss Campion.*
Native. Alpine. On bare spots on mountains. Local. P. June-July.

First record: *Graham* in *Top. Bot.*, 1874.
Torridon, *Canon Vaughan*. Mam Mhor, *A. H. Evans*. Ben Eay. Abundant on Beinn Dearg. Sgurr Mhor. Cnochan. Beallach nam bo.
From 700 to 3400 ft.

98. LYCHNIS [Tourn.] L.

98/1. L. Flos-cuculi L. *Cuckoo Flower.*
Native. Marshy places, burnsides, etc. Common. P. June-July.
First record: the author, *l.c.*, 1881.
Jeantown.

*98/3. L. alba Mill. *White Campion.*
Colonist or Casual. Lowland Cultivated ground. Rare. B. or P. July.
First record: the author, 1881.
Dornie. Ullapool. Jeantown. Strome Ferry. Little Sand.

98/4. L. dioica L. *Red Campion.*
L. diurna Sibth.
Native. Rocky places and mountain cliffs. Locally common. P. June-August.
First record: the author, 1881.
Abundant about Jeantown and of a dark crimson colour. Shieldaig. Gairloch. Braemore. Cnochan.
Ascends to 3000 ft.

*98/9. L. Githago Scop. *Corn Cockle.*
Colonist. Lowland. A weed of cultivated ground. Rare. A. July.
First record: the author, 1887.
Kinlochewe, a solitary specimen. Gairloch, *J. H. Dixon*.
Speaking of Ross-shire as a whole Davidson says it is too common. Now it has almost disappeared on the western coast.

100. CERASTIUM [Dill.] L.

100/3. C. alpinum L. *Alpine Mountain Chickweed.*
Native. On alpine rocks and in short grass. Rare. P. July.
First found by the author on rocks about the Coire Grandha, E. Ross, and on the slopes of Beinn Dearg at 3000 ft., W. Ross, 1902.

100/5. C. vulgatum L. *Mouse-ear Chickweed.*
C. triviale Link.
Native. Ascends to 3000 ft. On rocky ground, sandy places, and cultivated soils. Common. B. or P. June-October.
First record: the author, 1881.
Var. alpinum Gren. A Glas Beine in Kintail. An Teallach. Meall Gorm of Applecross. Either a form of this or a hybrid with *C. alpinum* L. on Slioch, *Mr Justice Talbot*, but he did not see the supposed parent, *C. alpinum*, there.

100/6. C. VISCOSUM L. *Broad-leaved Mouse-ear Chickweed.*
Native. Lowland. Chiefly in disturbed soil, but also in bare places. Common. A. or B. June-August.
First record: the author, 1881, as *C. glomeratum.*
Var. APETALUM (Dum.). Braemore. Applecross. Dundonnell. Gairloch.

100/8. C. SEMIDECANDRUM L.
Native. Sandy places. Rare or overlooked. A. May-July.
First record: the author, 1926.
Mellon Charles. Little Sand.

100/9. C. TETRANDRUM Curtis. *Sea Mouse-ear Chickweed.*
Native. On sea-sands on the coast. Local. A. June-July.
First record: *C. Bailey* in *Rep. Bot. Rec. Club*, 1887.
Gairloch, *Bailey.* Applecross, 1893. Ullapool, 1894. Port Henderson. Mellon Charles. Laid. Gruinard.
Var. CAESPITOSUM Druce. Gairloch. Ullapool.

100/11. C. CERASTOIDES (L.) Britton.
C. trigynum Vill.
Native. Among short grass on mountain tops. Very rare. A. July.
First found by *H. N. Dixon* in 1902.
Summit of Beinn Fiadha, 3380 ft.

101. STELLARIA L.

101/3. S. MEDIA Cyr. *Chickweed.*
Native. Lowland. Cultivated and waste ground. Abundant. April-September.
First record: the author, 1881.
Var. MAJOR Koch. Kinlochewe. Inverlael.

101/4. S. NEGLECTA Weihe.
S. umbrosa.
Native. Shady banks. Local. A. or B. July.
First record: the author, 1925.
Near Ullapool.

101/5. S. HOLOSTEA L. *Greater Stitchwort.*
Native. Lowland. Bushy places. Local. P. June-July.
First record: the author, 1881.
Attadale. Jeantown. Kishorn. Rhidorroch. Shieldaig. Gairloch. Loch Carron side.

101/7. S. GRAMINEA L. *Heath Stitchwort.*
Native. Lowland. Bushy and heathy places. Not uncommon. P. July-August.
First record: the author, 1881.
Keppoch, Braemore, Dundonnell, Kintail. Gairloch.

101/8. S. Alsine Grimm. *Bog Stitchwort.*
S. uliginosa Murray.
Native. Wet places, mossy margins of rills, etc. Common. P. May-August.
First record: the author, 1881.
Loch Maree. Laid. Kintail. Applecross. Gairloch. Glen Docharty, etc.

102. ARENARIA [Rupp.] L.

102/5. A. serpyllifolia L. *Thyme-leaved Sandwort.*
Native. Lowland. Dry banks, sand-dunes, roadsides, disturbed soils. Local, rather rare. A. June-July.
First record: the author, 1881.
By the railway at Strome. Roadside, Strathcarron, 1893. Applecross. Mellon Charles. Kinlochewe. Little Sand.

102/7. A. Peploides L. *Sea Purslane.*
Honkenya peploides Ehrh.
Native. Coastal. Locally abundant on rough shingle. P. June-July.
First record: the author, *l.c.*, 1893.
Loch Broom, *Lady Fowler*. Coigach, *Miss Field*. Torridon. Ullapool. Jeantown. Applecross. Gruinard. Poolewe. Badanscallie Bay. Aultbea.
Var. diffusa Hornem. Ullapool.

[A. norvegica Gunn. is found on river shingle in W. Sutherland.]

102/12. A. Sedoides (L.) Dr. *Mossy Cyphel.*
Cherleria Sedoides L.
Native. Alpine. Grassy places on mountains descending to 1800 ft. Local. P. June-July.
First record: *Graham* in *Tr. Bot. Soc. Ed.*, 201, 1843.
Loch Maree. *Graham*. Inverlael. Braemore. *Lady Fowler*. Abundant on Beinn Dearg. Sgurr Mhor. On the Slioch descending to 1800 ft., and as the var. *apetala*.

103. SAGINA L.

103/1. S. nodosa (L.) Fenzl.
Native. Lowland. In wet sandy places. Local. P. June-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Applecross, in the crevices of the limestone pavement, as the glabrous plant. Moist places by the burn on Little Sand, with var. *moniliformis* Lange.

103/2. S. subulata Presl.
Native. Lowland. Bare places on heathy soil. Rare. A. or P. July.
First record: *J. H. Dixon*, 1886.
Gairloch. *Dixon*. Rhidorroch, 1894. Inverbroom, 1902.

103/10. S. maritima Don.
Native. Bare places by the coast. Rare. A. July.

First record: the author, 1881.
Loch Duich. Ullapool.

103/11. S. PROCUMBENS L. *Pearlwort.*
Native. On waste and bare places, wall tops, etc. Common. P. May-September.
First record: the author, 1881.
Var. COROLLINA Ledeb. Big Sand.

104. SPERGULA L.

104/2. S. SATIVA Boenn. *Spurrey.*
Native or Colonist. Locally abundant in oat-fields. A. June-August.
First record: the author, 1881, as *S. arvensis*.
Ullapool. Dundonnell. Applecross. Melvaig. Gairloch.
The heavy valerianaceous odour is specially noticeable on warm moist evenings.

105. SPERGULARIA J. & C. Presl.

105/1. S. RUPICOLA Lebel. *Sea Spurrey.*
Native. Dry places on the coast. Rare. P. July.
First record: the author, 1881.
Loch Carron.

105/2. S. MEDIA (Pers.) Presl. *Sea Spurrey.*
Native. Wet places on the coast. Local. P. July-August.
First record: the author, 1893, as *S. media*.
Loch Carron. Applecross. Polglass. Shieldaig. Ullapool. Aultbea.
Var. APTERA (Marshall) Druce. Gairloch, 1926.

105/3. S. SALINA Presl. *Sea Spurrey.*
Native. Wet places on the coast. Local. P. June-July.
First record: *Allan* in *Tr. Bot. Soc. Ed.*, 117, 1886.
Morefield. Near Ullapool. Little Loch Broom. Applecross, *Mr Allan*.

105/5. S. RUBRA (Cr.) Presl. *Red Sandwort.*
Arenaria rubra (Cr.) Presl.
Native. Lowland. Bare stony places. Rare. A. June-July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
A few plants at Strathcarron. Dry fields at Kishorn.

14. *PORTULACACEAE.*

109. MONTIA [Mich.] L.

109/1. M. FONTANA L. *Blinks.*
Native. Wet places. Rather common. A. or P. June-August.
First record: the author, 1881.
The West Ross plant is *M. lamprosperma* Cham.
Var. BOREO-RIVULARIS Dr. Dundonnell. Loch Alsh. Braemore. Applecross. Achiltibuie. Plockton.

17. *HYPERICACEAE.*

112. HYPERICUM L.

112/1. H. Androsaemum L. *Tutsan.*
Native. Bushy places. Local. July-August.
First record: *G. Anderson* in *Hook. Fl. Scot.*, 1821.
Loch Maree, *G. Anderson.* Kyle of Loch Alsh, *Marshall.* Kintail. Glenelg. Duncraig. Inverlael. Plockton.

*112/5. H. calycinum L. *Rose of Sharon.*
Alien. A planted ornamental shrub. July.
Balmacarra, *Davidson* in *Scot. Nat.*, 1874. About Plockton, *J. A. Webb.*

112/9. H. pulchrum L. *Upright St John's Wort.*
Native. Heathy places. Rather common. P. July-August.
First record: the author, 1881.
Var. procumbens Rostr. Coigach.

112/14. H. perforatum L. *St John's Wort.*
Native.? Rare. P. July.
Gairloch, *J. H. Dixon*, 1886.
Needs confirmation.

112/15. H. humifusum L. *Creeping St John's Wort.*
Native. Heathy places. Very rare. P. July.
First found by the author, 1925.
Glen Docharty.

18. *MALVACEAE.*

115. ALTHAEA [Tourn.] L.

*115/1. A. officinalis L. *Marsh Mallow.*
Alien. Site of old garden between Shieldaig and Jeantown, *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843.

117. MALVA [Tourn.] L.

*117/1. M. moschata L. *Musk Mallow.*
Alien. Probably of garden origin. Rare. P. July.
First record: Gairloch, *J. H. Dixon*, 1886.
White flowered form, garden escape at Ullapool.

*117/2. M. sylvestris L. *Mallow.*
Alien. Waste places. Rare. P. June-July.
First record: Gairloch, *J. H. Dixon*, 1886. Plentiful on shingle at Jeantown.

19. *TILIACEAE.*

123. TILIA [Tourn.] L.

*123/1. T. platyphyllos Scop. *Large-leaved Lime Tree.*
Alien. Planted tree as at Braemore. July.

*123/2. T. europaea L. *Lime Tree.*
Alien. Planted tree at Braemore. Kishorn. Gairloch. Flowerdale.

20. *LINACEAE.*

124. RADIOLA [Dill.] Hill Brit. Herb.

124/1. R. Radiola (L.). *All Seed.*
R. Linoides Roth. *Millegrana Radiola.*
Native. Damp, grassy places. Very rare. A. July.
First record: Gairloch, *J. H. Dixon*, 1886.
I have not been able to find it. The record of Ross. Cat. in *Top. Bot.* is an error for the Ebudes. The plant is quite likely to be found as it is recorded for Sutherland and E. Ross.

125. LINUM [Tourn.] L.

125/3. L. catharticum L. *Purging Flax.*
Native. Grassy and heathy places and on grassy sand dunes. Common. A. June-July.
First record: the author, 1881.

*125/4. L. usitatissimum L. *Flax.*
Alien. On beach at Jeantown.

22. *GERANIACEAE.*

127. GERANIUM [Tourn.] L.

[127/1. G. sanguineum L. *Bloody Crane's-bill.*
Only reported for Gairloch by *J. H. Dixon*. It is on record for E. Ross. Not seen by me and needs verification.]

127/3. G. sylvaticum L. *Wood Crane's-bill.*
Native. Wet rocks. Rare. P. July-August.
First record: the author, 1881.
Rocks about the Falls of Glomach, 1886. Braemore, *Lady Fowler.*

127/9. G. dissectum L. *Cut-leaved Crane's-bill.*
Native.? In grassy fields. Rare. B. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Applecross. Braemore, *Lady Fowler.*

127/10. G. molle L. *Dove's-foot Crane's-bill.*
Native. In ground disturbed by man, on sand dunes, etc. Local. A. June-August.
First record: the author, 1881.
Strome. Applecross. Gruinard. Gairloch. Kinlochewe. Kishorn. Ullapool. Poolewe. Mellon Charles.
This is probably the *G. pusillum*, Coigach, of *Miss Field.*

127/13. G. lucidum L. *Shining Crane's-bill.*
Native. Rare. B. June-July.

First record: Gairloch, *J. H. Dixon*, 1886.
Noticed there in 1891 by *P. Ewing*. See *Scot. Nat.*, 63, 1900. I am sceptical about its indigenity, but it is on record for E. Ross.

127/14. G. ROBERTIANUM L. *Herb Robert.*
Native. Shady, rocky places. Locally common. B. June-August.
First record: the author, 1881.
Glen Docharty. Jeantown. Dundonnell. Flowerdale. Cnochan.
Var. ALBUM. Applecross. Inverlael.

128. ERODIUM L'Hérit.

128/3. E. CICUTARIUM L'Hérit. *Stork's-bill.*
Native. Sandy dunes. Rare. B. June-August.
First record: Gairloch (!), *J. H. Dixon*, 1886.
Applecross, 1893. Little Sand.

132. OXALIS L.

132/1. O. ACETOSELLA L. *Wood Sorrel.*
Native. Rocky shady places. Ascends to 2500 ft. Local. P. July.
First record: the author, 1881.
Base of Slioch. Strome. Kishorn. Dundonnell. Glen Docharty. Loch Maree.

24. *ILICACEAE.*

136. ILEX [Tourn.] L.

136/1. I. AQUIFOLIUM L. *Holly.*
Native. Rocky places. Ascends to 1000 ft. Not uncommon. P. June-July.
First record: the author, 1881.
Achiltibuie, *V. Buxton*. Glen Docharty. Sides of the Slioch. Coigach. Dundonnell. Isle of Maree.
Var. LAURIFOLIUM Lej. Achnashellach, *Rev. H. E. Fox.*

30. *ACERACEAE.*

142. ACER [Tourn.] L.

*142/1. A. PSEUDO-PLATANUS L. *Sycamore.*
Alien. Planted tree. July.
First record: the author, 1881.
Loch Duich. Loch Carron. Gairloch.

31. *LEGUMINOSAE.*

149. ULEX L.

*149/1. U. EUROPAEUS L. *Furze.*
Alien. Planted shrub. March.
First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 202, 1843.
Braemore, *Lady Fowler*. Mellon Charles. Jeantown, *Graham*.
Extensively planted as a game cover.

150. CYTISUS L.

150/1. C. SCOPARIUS Link. *Broom, Gowans.*
Sarothamnus scoparius Wimm.
Native. Low rocky ground. Shrub. June-July.
First record: the author, 1881.
Braemore, *Lady Fowler.* Strome. Kishorn. Ullapool. Gruinard. Poolewe. Kinlochewe.

153. MEDICAGO [Tourn.] L.

153/7. M. LUPULINA L. *Medic, Nonsuch.*
Probably adventive. Rare. A. or B. June-July.
First record: the author, 1881.
Gairloch, *J. H. Dixon.* Kinlochewe.

155. TRIFOLIUM [Tourn.] L.

155/2. T. pratense L. *Red Clover.*
Native. In the lowlands in grassy places. Rather common. P. June-August.
First record: the author, 1881.
Gairloch. Mellon Charles. Big Sand. Strathcarron. Braemore.

*155/15. T. HYBRIDUM L. *Alsike Clover.*
Alien. A relic of cultivation.
First record: *Rev. E. F. Linton* in *Rep. Bot. Rec. Club*, 1885.
Strome Ferry, *Linton.* Dundonnell. Jeantown. Mellon Charles. Aultbea.

155/16. T. REPENS L. *Dutch Clover.*
Native. In grassy places in the lowlands. Common. P. June-August.
First record: the author, 1881.
A large flowered form occurred at Ullapool.

155/20. T. PROCUMBENS L. *Hop Trefoil.*
Native. Grassy places. Rare. A. June-August.
First record: the author, 1881.
Strome. Ullapool. Little Sand.

155/21. T. DUBIUM Sibth. *Smaller Hop Trefoil.*
Native. Not rare in the lowlands. A. June-August.
First record: the author. 1887, as *T. minor.*
Kinlochewe. Strathcarron. Applecross. Ullapool. Melvaig.
Var. PYGMAEUM Soy.-Will. Ullapool. Gairloch.

156. ANTHYLLIS L.

156/1. A. VULNERARIA L. *Lady's Fingers.*
Native. On the limestone. Local. P. June-August.
First record: *C. Bailey* in *Rep. Bot. Rec. Club*, 1883.
Gairloch, *Bailey.* Ullapool. Kishorn. Cnochan. On river shingle at Kinlochewe. River Carron side. Melvaig. Little Sand. Near Loch Achall.

160. LOTUS [Tourn.] L.

160/4. L. ULIGINOSUS Schkuhr.
Native. Moist places on sand dunes. Rare. P. July.
First found by the author, 1926.
As the var. (or mod.) *decurtatus* Peterm., Little Sand.

160/5. L. CORNICULATUS L. *Bird's-foot Trefoil.*
Native. In grassy, sandy, and rocky places. Rather common, often as a larger flowered plant than the English species as at Cnochan. P. June-August.
First record: the author, 1881.
Var. INCANUS Gray. Ullapool.
Var. CRASSIFOLIUS Pers. Big Sand.

176. VICIA [Tourn.] L.

176/1. V. SYLVATICA L. *Wood Vetch.*
Native. Cliffs. Rare. P. July.
First record: *Top. Bot.*, 1874, unlocalised.
Loch Duich, *H. N. Dixon.* Keppoch.

176/3. V. CRACCA L. *Tufted Vetch.*
Native. Common, especially as a cornfield plant. P. June-July.
First record: the author, 1881.
Var. INCANA Thuill. On shingle, Ullapool.
The common plant is var. *imbricata* Gil.

176/8. V. SEPIUM L. *Bush Vetch.*
Native. Bushy places. Not uncommon, and in two forms. P. July.
First record: *Allan* in *Tr. Bot. Soc. Ed.*, 1886.
Achiltibuie, *V. Buxton.* Kinlochewe. Braemore. Applecross. Ullapool. Strath. Loch Maree.

*176/12. V. SATIVA L. *Common Vetch.*
Alien. As a relic of, or straggler from, cultivation. A. July.
Kinlochewe, 1887. Mellon Charles (var. *obovata* Gaud.).

176/13. V. ANGUSTIFOLIA Reich. *Wild Vetch.*
Native. Lowland. Dry grassy places. Rare. A. June-July.
First record: the author, 1893.
Ullapool. Strathcarron.

176/34. V. HIRSUTA S. F. Gray. *Hairy Tare.*
Native. Bushy places. Rare. A. June-July.
First record: the author, 1881.
Braemore, *Lady Fowler.* Achiltibuie, *V. Buxton.* Strome. Loch Carron. Jeantown. Strath. Ullapool.

178. LATHYRUS [Tourn.] L.

178/4. L. MARITIMUS Big. *Sea Pea.*
Native. On shingle. Very rare. P. July.

First record: On the coast near Poolewe.

178/6. L. PRATENSIS L. *Meadow Vetchling.*
Native. As a glabrous plant in fields and dunes. Not uncommon. P. July.
First found by the author in 1881.
Gairloch. Little Sand.

178/25. L. MONTANUS Bernh. *Wood Pea.*
Native. Widely distributed in heathy places. P. June-August.
First found by the author in 1881.
Braemore. Dundonnell. Kishorn. Loch Maree.
Var. TENUIFOLIUS Garcke. Fannich, *Lady Margaret Watney.* Braemore, *Lady Fowler.* Loch Maree, *Mr Justice Talbot.* Glen Shiel.
Ascending to 2000 ft. in Fannich.

32. *ROSACEAE.*

183. PRUNUS [Tourn.] L.

183/2. P. PADUS L. *Bird Cherry.*
Native. River glens and gullies. Local. Tree. June-July.
First record: the author, 1887.
Applecross. Kishorn. Inverlael. Braemore. Kinlochewe.

183/3. P. AVIUM L. *Wild Cherry, Gean.*
Doubtful native. Near villages. Tree. June.
First found by the author, 1889.
Achnashellach. Tallodale, *J. A. Webb.* Glenelg. Strathcarron. Dundonnell. Gairloch.

[183/4. P. CERASUS L. Gairloch, *J. H. Dixon.* Probably *P. avium* meant.]

183/5. P. DOMESTICA L. *Wild Plum.*
Alien. Planted. Small tree. May.
Strathcarron.

183/6. P. INSITITIA L. *Bullace.*
Doubtfully native. Rare. Small tree. May.
First record: the author, *l.c.*, 1893.
Applecross.

183/7. P. SPINOSA L. *Sloe.*
Native. Bushy places. Small tree. April-May.
First record: the author, 1881.
Strathcarron. Applecross. Old bushes by river at Ullapool. Achiltibuie, *V. Buxton.*

184. SPIRAEA L.

*184/10. S. SALICIFOLIA L.
Alien, from N. Europe. Planted at Inverlael, etc.

184/11. S. ULMARIA L. *Meadow Sweet.*
Native. Marshes, wet places. Rather common. P. June-July.
First record: the author, 1881.
Loch Maree. Gairloch. Aultbea. Dundonnell. Ullapool, etc.

185. RUBUS [Tourn.] L.

185/1. R. IDAEUS L. *Raspberry.*
Native. Local. Shrub. June.
First record: the author, 1881.
Abundant on shingle, Loch Maree. Braemore. Loch Coulin side.
Var. LEUCOCARPUS. Applecross, 1913.

185/2. R. NESSENSIS Hill.
R. suberectus And.
Native. Rare. Shrub. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Three places near Kinlochewe, *Salmon.* Inverlael.

185/3. R. FISSUS Lindl.
Native. Local. Shrub. July.
First record: the author, *l.c.*, 1894.
Near Ullapool, in several places. Dundonnell.

185/4. R. ROGERSII Linton.
Native. Rare. Shrub. July.
First record: *C. E. Salmon.*
Kinlochewe, *Salmon.* Braemore. Melvaig. Mellon Charles.

185/6. R. PLICATUS W. & N.
Native. Local. Shrub. July.
First record: the author, *l.c.*, 1893.
Near the shooting lodge. Dundonnell.

185/17. R. INCURVATUS Bab.
Native. Rare. Shrub. July.
First record: the author, *l.c.*, 1893.
Near Ullapool.

185/23. R. RHAMNIFOLIUS W. & N.
Native. Local. Shrub. July.
First record: the author, *l.c.*, 1894.
Strome Ferry.

185/29. R. POLYANTHEMUS Lindb.
R. pulcherrimus Neum. non Hook.
Native. Local. Shrub. July.
First record: the author, *l.c.*, 1894.
Jeantown.

185/35. R. VILLICAULIS W. & N.
Native. Rare. Shrub. July.
First record: the author in *Rep. B.E.C.*, 1925.
The type at Gairloch.

185/37. R. SELMERI Lindeb.
Native. Local. Shrub. July.
First found by the author, *l.c.*, 1881.
Strathcarron. Ullapool. Kinlochewe. Gairloch. Strome.

185/53. R. MACROPHYLLUS W. & N.
Native. Local. Shrub. July.
First found by the author, 1893.
Inverlael.

185/55. R. DANICUS Focke.
Native. Rare. Shrub. July.
First record: *Rev. E. S. Marshall* in *Journ. Bot.*, 133, 1910.
Kyle of Loch Alsh.

185/56. R. MACROPHYLLOIDES Génév.
Native. Rare. Shrub. July.
First found by the author, 1925.
Gairloch.

185/66. R. PYRAMIDALIS Kalt.
Native. Local. Shrub. July.
First record: the author, *l.c.*, 1893.
Kinlochewe, *Salmon*. Ullapool. In fine condition, Dundonnell.

185/67. R. VESTITUS W. & N.
R. leucostachys Schleich.
Native. Rare. Shrub. July.
First record: the author, *l.c.*, 1894.
Ullapool.

185/80. R. MUCRONIFER Sudre.
R. mucronatus Blox.
Native. Local. Shrub. July.
First record: the author, *l.c.*, 1893.
Ullapool. Braemore. Inverlael.

185/90. R. RADULA W. & N.
Native. Local. Shrub. July.
First record: the author, *l.c.*, 1894.
Handsome plants at Ullapool. Shieldaig. Poolewe.

185/130. R. DASYPHYLLUS Rogers.
Native. Rare. Shrub. July.

First found by the author in 1926.
Gairloch. Shieldaig.

185/151. R. corylifolius Sm.
Native. Local. Shrub. July.
First record: Glen Shiel, *Davidson* in *Scot. Nat.*, 1894.
Near Ullapool. On limestone at Applecross and Kishorn. Loch Maree.

185/154. R. saxatilis L. *Stone Bramble.*
Native. Hilly places. Rare. P. July.
First record: *J. H. Dixon*, 1886.
Gairloch, *Dixon*. The Slioch. An Teallach. Meall Gorm of Applecross. Cnochan. Beinn Dearg.
Var. setodermis Borb. Near sea level at Jeantown. Ascends to 2800 ft. on the Slioch.

185/155. R. Chamaemorus L. *Cloud Berry, Avern.*
Native. Alpine peat moors. Rare. P. July.
First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843.
Black Rocks, *Lady Fowler*. Above Inverlael. Slioch. An Teallach, fruiting freely, 1893. Beinn Dearg. Sgurr Mhor. Ascends from 2000 to 3000 ft.

186. DRYAS L.

186/1. D. octopetala L. *Mountain Avens.*
Native. Limestone rocks. Very local. P. June-July.
First record: On a limestone rock called Cragach no Caen upon the boundaries of Coigach and Assynt just on the confines of Ross-shire and Sutherland, *Lightfoot Flora Scotica*, 1777.
Still there in Ross-shire.

187. GEUM L.

187/1. G. urbanum L. *Avens.*
Native. Not uncommon. P. June-July.
First record: the author, 1881.
Loch Carron. Kinlochewe. Loch Maree. Gairloch.

187/2. G. rivale L. *Wood Avens.*
Native. In damp, grassy places. Rather common. P. June-July.
First record: the author, 1881.
Glas Bianasdael, *Salmon*. Loch Long. Braemore. Dundonnell. Jeantown. Cnochan. Strome. Strathcarron Hill, 2000 ft. Gairloch.

×G. rivale×urbanum = G. intermedium Ehrh. Strome, *E. F. Linton*, 1885. Jeantown.

188. FRAGARIA [Tourn.] L.

188/2. F. vesca L. *Wild Strawberry.*
Native. In open bushy places. Rather common. P. July.

First record: the author, 1881.
Beinn Slioch. Loch Maree. Loch Alsh. Gairloch. Applecross.

189. POTENTILLA L.

189/3. P. Anserina L. *Gooseweed.*
Native. Abundant and luxuriant as a shingle weed. P. June-July.
First record: the author, 1881.
Achiltibuie, *V. Burton.* Jeantown. Applecross. Gairloch. Poolewe. Strath. Port Henderson, etc.
Var. sericea Koch, with leaves silvery on both surfaces, is the common form.
Var. concolor Wallr., with leaves green above, Ullapool, Gairloch.

[P. argentea L. is doubtless an error; the foregoing is meant in the record of the Applecross.]

[189/7. P. reptans L. is probably a misnomer given in *J. H. Dixon's* Gairloch List, 1886.]

189/9. P. erecta Hampe.
P. Tormentilla Neck.
Native. Common, and generally distributed in heathy ground and on acid soils. P. June-August.
First record: the author, 1881.
The roots are used in dyeing cloth.

189/10. P. sterilis (L.) Garcke. *Barren Strawberry.*
Native. Dry banks. Rare. P. June.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893, as *P. Fragariastrum.*
Jeantown. Applecross.

189/24. P. Sibbaldii Hall. f.
Sibbaldia procumbens L.
Native. Alpine places. On bare, stony screes. Local. P. July.
First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843.
Ben Fiadha, *H. N. Dixon.* Ben Eay, *Mr Justice Talbot.* Sgurr Mhor, *Lady M. Watney.* Beinn Dearg. Ben Liath Beag. Ascends from 2500-3500 ft.

189/25. P. palustris Scop. *Marsh Cinquefoil.*
Comarum palustre L.
Native. In bog-holes and wet marshes. Very local. P. July.
First record: the author, 1881.
Loch in Coigach, *Lady Fowler.* Loch Alsh. Achiltibuie. Side of Loch Duich.

190. ALCHEMILLA L.

190/4. A. minor Huds. *Lady's Mantle.*
Native. In rather open grassy ground. Local. P. July.
First record: the author, 1893.
Between Kishorn and Applecross. Inverbroom. Cnochan. Kinlochewe.

190/8. A. ALPESTRIS Schmidt. *Lady's Mantle.*
Native. Alpine cliffs, grassy places, and stream shingles. Local. P. June-July.
First record: the author, 1881, as *vulgaris.*
Shingly margin of River Carron. Ben Eay, on stream-sides. Cnochan rocks. Loch Maree side. Inverbroom.

190/19. A. ALPINA L.
Native. On the talus of mountains, streams, shingles, etc. Common. P. June-July.
First record: *Campbell* in *Top. Bot.*, 1874.
Ben Eay. Slioch. Sgurr Fhuaran. An Teallach. Beinn Dearg. Sgurr Mhor. A Glas Bheine, etc.
The Scottish plant is var. *glomerata* Tausch; the type *alpina* has not been found in Britain.

190/20. A. ARVENSIS Scop. *Parsley Piert.*
Native. Bare places in fields, etc. Rather rare. A. June-July.
First record: the author, 1881.
Dornie.

194. ROSA [Tourn.] L.

194/6. R. CANINA L. *Dog Rose.*
Native. In the lowlands, by roadsides, etc. Common. Shrub. June-July.
First record: the author, 1881.
Var. LUTETIANA (Lem.). Jeantown.

194/7. R. SQUARROSA Rau.
R. dumalis auct. brit.
Native. Hedges and banks. Shrub. July.
First record: Gairloch. *Bailey*, as *dumalis.*
Strome Ferry. *Linton.* Loch Alsh, 1880. Kinlochewe. Ullapool. Plockton.

194/9. R. BLONDAEANA (Rip.). *Dog Rose.*
Native. Bushy places. Very rare. Shrub. July.
First record: *C. Bailey* in *Rep. Bot. Rec. Club*, 1884-6, as *R. marginata.*
Gairloch.

194/10. R. DUMETORUM Thuill. *Dog Rose.*
Native. Lowland banks and roadsides. Local. Shrub. July.
First found by the author, 1894.
Applecross. Strathcarron, as the var. *urbica* Lem.

194/12. R. GLAUCA Vill.
(This is the *R. dumalis* Bechst. and an older name than *glauca*, but it has been for so long a time used in Britain for *squarrosa* Rau that its use in the above sense would give rise to much confusion.)

Native. Lowland banks, etc. Rather rare. Shrub. July.
First found by the author, 1894.
Ullapool. Loch Alsh. Gairloch. Poolewe.
Var. INTERMEDIA (Gren.) = *subcristata* Baker. Gairloch.
Var. GLANDULOSA Druce. Applecross. Has single teeth and glandular pedicels and sepals.

194/13. R. CAESIA Sm. *Dog Rose.*
R. coriifolia Fr.
Native. Lowland bushy places. Local. Shrub. July.
First record: the author, Applecross, 1894.
Ullapool. Loch Maree. Gairloch. Kyle of Loch Alsh. Also at Ullapool a form with pubescent petioles and slightly glandular pedicels.
Var. WATSONI (Baker) Dr. Jeantown.

194/15. R. ELGANTERIA L. *Sweet Brier.*
R. rubiginosa L.
Native. Lowland bushy places. Rare. Shrub. July.
First record: the author, 1881.
Kinlochewe. Applecross. Gairloch.

194/19. R. TOMENTOSA Sm. *Downy Dog Rose.*
Native. Rather common in the lower glens. Shrub. July.
First record: the author, 1881.
Var. SCABRIUSCULA (Winch). Applecross. Ullapool.
Var. SYLVESTRIS (Lindley). Kinlochewe. Ullapool, 1887.

194/20. R. OMISSA Déség. *Downy Dog Rose.*
Native. Rather common. Shrub. July.
Var. CUSPIDATOIDES Crép. Achnashellach, *Rev. H. E. Fox*, 1893.
Var. SUBERECTA (Woods). Kyle of Loch Alsh, *Marshall*. Ullapool. Loch Carronside.
Var. GLABRATA (Schentz.). Strome Ferry, *W. R. Linton* in *Rep. Bot. Rec. Club*, 1886. Kyle of Loch Alsh and Durinish, *Marshall*. Ullapool.

194/21. R. VILLOSA L. *Downy Rose.*
R. mollis Sm.
Native. Not rare in the wooded straths. Shrub. July.
First record: the author, 1881.
Loch Maree. Ullapool. Dundonnell. Applecross. Kishorn. Kintail. Loch Alsh.
Var. CAERULEA (Woods). Kinlochewe. Plockton. Keppoch.

194/23. R. SPINOSISSIMA L. *Burnet Rose.*
Native. Lowland grassy places. Rare. Shrub. June-July.
First record: *Churchill Babington*, ante 1873.
Coigach, *Miss Field*.
It is very luxuriant with large flowers near to the boundary at Elphin, Sutherland.

194/23. R. INVOLUTA Sm.
R. spinosissima × tomentosa.
Native. Bushy places. Rare. Shrub. July.
First record: *Davidson* in *Scot. Nat.* 1873.
Gairloch, *Davidson.* Loch Maree. Loch Clair.

195. PYRUS [Tourn.] L.

195/1. P. MALUS L. *Crab.*
Native. Bushy places. Local. Small tree. May-June.
First record: the author, 1881.
Strome. Dundonnell. Braemore. Gairloch.

195/5. P. AUCUPARIA Ehrh. *Mountain Ash.*
Native. Cliffs and woods. Not uncommon. Small tree. June.
First record: the author, 1881.
Loch Maree, *Mr Justice Talbot.* Strome. Kinlochewe. Falls of Glomach. Gairloch.

*195/9. P. INTERMEDIA Ehrh.
P. scandica Fr.
Alien. Probably planted. Rare. Tree. July.
First found by the author in 1902.
Gairloch. Braemore.

*195/13. P. ARIA Ehrh. *White Beam.*
Alien. Doubtless planted. Rare. Tree. July.
Gairloch, *J. H. Dixon*, 1886. Loch Carron, *Davidson* in *Scot. Nat.*, 1873. Gairloch.

197. COTONEASTER [Rupp.] Med.

*197/3. C. SIMONSII Baker.
Alien. Planted or bird sown. Shrub. July.
Gairloch, 1926. Braemore.

196. CRATAEGUS L.

196/1. C. MONOGYNA Jacq. *Hawthorn.*
Native. Not rare in the lowlands. Shrub. June-July.
First record: the author, 1881.
Dornie. Jeantown. Applecross. Ullapool. Gairloch. Dundonnell. On An Teallach.
Var. QUERCIFOLIA Loudon. Gairloch.

33. *SAXIFRAGACEAE.*

199. SAXIFRAGA [Tourn.] L.

199/1. S. AIZOIDES L. *Golden Saxifrage.*
Native. Mountain rills. Descending to sea level. Common. P. June-July.
First record: the author, 1881.

Kinlochewe.

The Ross plant has ciliate leaves and bright yellow not brownish flowers.

H. W. Davies, the artist, once asked me what plant it was the colouring of which recalled the carrot "garnishing" round boiled beef.

199/2. S. OPPOSITIFOLIA L. *Purple Saxifrage.*

Native. Alpine. Wet rocky places and cliff surfaces. Local. P. April-June.

First record: the author, 1881.

A Glas Bheine in Kintail. Ben Eay. Beinn Dearg. Sgurr Mhor; Beinn a Mhuinidh, *Salmon*.

Descends to 1500 ft.

199/10. S. HYPNOIDES L. *Mossy Saxifrage.*

Native. Stony places and on rock cliffs. Rare. P. July.

First record: the author, 1881.

Beinn a Mhuinidh and Glen Docharty, *Salmon*. A Glas Bheine. Meall Gorm. Cnochan. Beallach nam bo.

199/23. S. STELLARIS L.

Native. Alpine. Mountain cliffs, rillsides, etc. Rather common. P. June-July.

First record: the author, 1881.

Coigach, *Miss Field*. Slioch. Sgurr Fhuaran. Meall Gorm. An Teallach. Cnochan. Sgurr Mhor. Fannich. Ben Eay. Beinn Alligin. Culbeg. Descends to 400 ft. or less.

Var. FONTANA Druce. Sgurr na Caorach.

203. CHRYSOSPLENIUM [Tourn.] L.

[203/1. C. ALTERNIFOLIUM L. Gairloch, *J. H. Dixon*, 1886. Needs confirmation. It occurs in Inverness-shire.]

203/2. C. OPPOSITIFOLIUM L. *Opposite-leaved Golden Saxifrage.*

Native. Wet, shady places. Not rare. P. June-July.

First record: the author, 1881.

Achiltibuie, *F. Buxton*. Side of Loch Beag. Talladale. Applecross. Jeantown. Loch Maree. Cnochan. Dundonnell. Braemore.

205. PARNASSIA L.

205/1. P. PALUSTRIS L. *Grass of Parnassus.*

Native. Wet, grassy places. Local. P. July-August.

First record: the author, 1881.

Loch Maree, *Mr Justice Talbot*. Kinlochewe, *Salmon*. Moilan. Gairloch. Strome, abundant. Cnochan. Inverbroom.

207. RIBES [Tourn.] L.

*207/1. R. GROSSULARIA L. *Gooseberry.*

Denizen. Bird-sown specimens. Rare. Bush. June.

First record: the author, 1881.
Strome. Jeantown. Strathcarron, *J. A. Webb.*

*207/2. R. NIGRUM L. *Black Currant.*
Alien. Bird sown. Rare. Bush. June.
First found by the author in 1887.
Braemore, fruiting freely, bird sown. Port Henderson. Shieldaig.

*207/3. R. RUBRUM L. *Red Currant.*
Alien. As bird sown examples. Rare. Bush. June.
First found by the author, 1887.
Ullapool. Port Henderson.

34. *CRASSULACEAE.*

211. SEDUM [Tourn.] L.

*211/1. S. PURPUREUM Link. *Orpine.*
S. Telephium of British authors.
Alien? Only given in Davidson's List of Gairloch places, 1886.

211/6. S. ACRE L. *Golden Stonecrop.*
Native. Lowland. Dry, sunny places, dunes, etc. Local. P. June-July.
First record: the author, 1887.
Achiltibuie, *F. Buxton.* Cnochan. Isle of Longa. Gairloch. Ullapool. Applecross. This last may be the true *acre*; the others belong to the plant described as *S. Drucei* by Prof. Graebner of Berlin.

211/11. S. ANGLICUM Huds. *White Stonecrop.*
Native. Rocks. Rather common near the sea. Local. P. July.
First record: *Davidson* in *Scot. Nat.*, 1873.
Coigach, *Miss Field.* Kyle of Loch Alsh, *J. A. Webb.* Achiltibuie, *F. Buxton.* Gairloch. Isle of Longa. Shieldaig. Mellon Charles. Loch Maree. Plockton.

211/22. S. ROSEUM Scop. *Rose-root.*
Rhodiola rosea L.
Native. Alpine. Local on steep mountains and sea cliffs. P. June-July.
First record: *Davidson* in *Scot. Nat.*, 1873.
Coigach, *Miss Field.* Baosbheinn. Gairloch, *Davidson.* Plentiful on the Glomach cliffs. Strathcarron hills. An Teallach. Beallach nam bo. Slioch. Beinn Dearg. Sgurr Mhor. Fannich. Ascends to 3000 ft.

35. *DROSERACEAE.*

213. DROSERA L.

213/1. D. ANGLICA Huds. *Long-leaved Sundew.*
Native. Wet bogs. Lowland and locally common. P. June-July.
First record: *Davidson* in *Scot. Nat.* 1873.

Gairloch, *Davidson*. Achiltibuie, *V. Buxton*. Coigach, *Miss Field*. Kinlochewe. Loch Coulin. Fannich. Am Fheoir. Shieldaig. Near Loch Boor. Kintail. Torridon.

213/1. D. OBOVATA Koch.
D. anglica × *rotundifolia*.
The hybrid is local, growing with the two parents in very wet bogs.
First record: the author, 1881.
Loch Macreannach, *Salmon*. Loch Coulin. Loch Clair. Glen Torridon. Kintail.

213/2. D. LONGIFOLIA L. *Long-leaved Sundew.*
Native. Bogs. Rare. P. July.
First record: *A. H. Evans* in *Scot. Nat.*, 163, 1900, and 107, 1901.
The record (*l.c.*, 186, 1891) for it was a mistake for the previous *D. obovata*.

213/13. D. ROTUNDIFOLIA L. *Round-leaved Sundew.*
Native. Wet bogs. Abundant and generally distributed in boggy places. P. June-July.
First record: the author, 1881.
Flowering very abundantly in 1893 and 1926.

36. *HALORAGACEAE.*

214. HIPPURIS L.

214/1. H. VULGARIS L *Mare's Tail.*
Native. Shallow water. Lowland. Rare. P. July.
First record: *J. A. Webb* in *Rep. B.E.C.*, 192
Kerrydale; Gairloch, *Webb*.

216. MYRIOPHYLLUM L.

216/1. M. SPICATUM L. *Spiked Water Milfoil.*
Native. Pools. Rare. P. July.
First record: *P. Ewing* in *Scot. Nat.*, 163, 1900, and 107, 1901.
It occurs in E. Ross, Sutherland, and Inverness.

216/2. M. ALTERNIFLORUM DC. *Water Milfoil.*
Native. Streams. Lowland. Locally common. P. July.
First record: the author, 1881.
Loch Maree. River Carron. Loch Coulin. Loch Achall. Poolewe. Gairloch, etc.

217. CALLITRICHE L.

217/1. C. STAGNALIS Scop. *Water Starwort.*
Native. Pools, dykes, and slow streams. Common. P. July.
First record: the author, 1881.
Loch Maree. Gairloch. Aultbea. Kinlochewe. Port Henderson, etc.
Var. PLATYCARPA (Kuetz.). Ullapool.
Var. SERPYLLIFOLIA (Kuetz.). Gruinard.

217/4. C. POLYMORPHA Lönnr.
Native. In the still peat water of a road drain. Very rare. P. July.
First found by the author in 1925.
Near Poolewe.

217/5. C. INTERMEDIA Hoffm.
C. hamulata Kuetz.
Native. Lochs. Not rare. P. July.
First record: the author, 1881.
Loch Alsh. A drawn out form in Loch Achall. At 2050 ft. in a pool on the Beallach nam bo. A small condensed form in Loch a Mhuilinn. Loch Maree. Stream coming from Lochan-an-Iasgaich. Near the river, Loch Maree, *Salmon*. This is, teste Williams, *C. angustifolia* Hoppe. Shieldaig. Beinn Dearg. Loch Achall.
Var. LACUSTRIS Will., f. CALLEOPHYLLA Will. Prod. Brit. 509. Loch Alsh. *Druce*. See *Reichb. Ic. Fl. Germ.* v., t. 1208.

217/6. C. AUTUMNALIS L.
Native. Lochs or rather deep water. Rare. P. July.
First found by the author, 1881.
Loch Maree.

[C. VERNA L. is given in Allen's Applecross List. It probably was *C. stagnalis*.]

38. *ONAGRACEAE.*

220. EPILOBIUM L.

220/1. E. ANGUSTIFOLIUM L. *Rose Bay, Willow Herb.*
Native. Stony places. Local. P. June-July.
First record: *J. H. Dixon*, 1886.
Coigach, *Miss Field*. Loch Broom, *Lady Fowler*. Gairloch, *J. H. Dixon*. Applecross. Certainly native on the Cnochan rocks.
In East Ross it ascends to nearly 2000 ft. It is a very assurgent species.

220/4. E. PARVIFLORUM Schreb. *Willow Herb.*
Native. Local. Waysides and coastal rocks. P. June-July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
On the limestone pavement. Applecross. Kishorn, on limestone.

220/7. E. OBSCURUM Schreb. *Willow Herb.*
Native. Damp places and roadsides. Local. P. July.
First record: the author, 1881.
Achiltibuie, *V. Buxton*. Strome. Kishorn. Kinlochewe. Dundonnell. Braemore. Gairloch. Applecross. Loch Maree.
× PALUSTRE = E. SCHMIDTIANUM Rost. Applecross. Kinlochewe.
× PARVIFLORUM = E. DACICUM Borbas. Kinlochewe.

220/10. E. MONTANUM L. *Willow Herb.*
Native. Rocky places, waysides, etc. Lowland. Not uncommon. P. June-August.

First record: the author, 1881.
Kinlochewe. Loch Maree. Kyle of Loch Alsh. Gairloch. Braemore. Ullapool. Flowerdale.
Var. MINOR Haussk. Kinlochewe. Inverlael.
×OBSCURUM = E. AGGREGATUM Celak. Kinlochewe. Ullapool.

220/12. E. ALSINIFOLIUM Vill.
Native. Mountain bogs and borders of streams. Rare. P. July.
First found by the author in 1881.
Ben Eay.
Included in Dixon's Gairloch List, 1886, but of doubtful identification.

220/13. E. ALPINUM L. *Alpine Willow Herb.*
Native. Alpine. Damp rocks. Local. P. June-August.
First record: *Lightfoot's Fl. Scotica*, 1777.
Mountain near Loch Broom. *Lightfoot*. Coigach, *Miss Field*. Slioch, *Salmon*. An Teallach. Beallach nam bo. Ben Eay. Lienthgoch. Sgurr Mhor. Cnochan. Beinn Dearg.
Descends to 800 ft.
×PALUSTRE = E. DASYCARPUM Fries. Slioch, *Salmon*.

220/14. E. PALUSTRE L. *Marsh Willow Herb.*
Native. Bogs and marshes. Common and variable. P. June-August.
First record: the author, 1881.
Coigach, *Miss Field*. Kinlochewe. Strathcarron. Kintail. Applecross. Torridon. Shieldaig. Gairloch. Aultbea. Poolewe. Cnochan. Glen Shiel.
Var. FONTANUM. Beallach nam bo.

225. CIRCAEA.

225/3. C. ALPINA L. *Alpine Enchanter's Nightshade.*
Native. Moist, rocky places. Local. P. June-July.
First record: *Lightfoot's Fl. Scotica*, 1777.
Mountain near Little Loch Broom, *Lightfoot*. Loch Maree, very small. Applecross, on sea-beach. Dundonnell. Strathcarron. Cnochan.

225/2. C. CANADENSIS Hill. *Enchanter's Nightshade.*
C. intermedia Ehrh.
Native. Shady, stony places. Rare. P. July.
First found by the author, Loch Maree, 1925.

42. *UMBELLIFERAE.*

237. HYDROCOTYLE L.

237/1. H. VULGARIS L. *Pennyrot*
Native. Wet, grassy places. Rather uncommon. P. June-July.
First record: the author, 1881.
Loch Maree, and as the floating form. Applecross. Gairloch.

241. SANICULA [Tourn.] L.

241/1. S. europaea L. *Wood Sanicle.*
Native. Shaded places. Local. P. June-July.
First record: the author, 1881.
Strome. Loch Maree side. Isle Maree. Ullapool. Jeantown. Applecross, etc.

254. AEGOPODIUM L.

*254/1. Æ. Podagraria L. *Gout-weed.*
Alien. Near habitations. Local. P. July.
First record: *J. H. Dixon*, 1886.
Jeantown. Ullapool. Applecross. Poolewe. Gairloch, *Dixon.* Little Sand.

247. APIUM [Tourn.] L.

247/3. A. nodiflorum (L.) Lag.
Native. Burns and watery places. Rare. P. July.
First record: *Davidson* in *Scot. Nat.*, 1873.
Gairloch, *Davidson.* Not seen by me.

[248/1. Cicuta virosa L.
Glen Shiel, *Davidson* in *Scot. Nat.*, 1873. Needs confirmation. I saw *Oenanthe crocata* there. It is recorded for Inverness and Uist.]

256. CONOPODIUM Koch.

256/1. C. denudatum Koch.
Native. Grassy slopes and pastures. Locally common. P. June.
First record: the author, 1881.
Loch Maree side. Cnochan. Gairloch.

257. MYRRHIS [Tourn.] Mill.

*257/1. M. Odorata Scop. *Sweet Cicely.*
Denizen. Garden straggler. Rare. P. June-July.
First record: *J. H. Dixon*, 1886.
Gairloch, *Davidson.* Inveran. Loch Broom, *Lady Fowler.*

258. CHAEROPHYLLUM L.

258/2. C. temulentum L.
Native. Waysides. Rare. P. July.
First record: the author, 1881.
Jeantown. Loch Duich side.

259. SCANDIX L.

*259/1. S. Pecten-veneris L. *Shepherd's Needle.*
Colonist. Cultivated ground. Rare. A. July.
First record: *J. H. Dixon*, 1886.
Gairloch, *Dixon.* Strathcarron.

261. CHAEREFOLIUM Haller.

261/1. C. sylvestre (L.) S. & T. *Keck.*
Native. Lowland. Waysides. Local. P. June-July.

First record: *J. H. Dixon*, 1886.
Gairloch, *Dixon*. Kishorn. Applecross. Jeantown, 1893. Poolewe. Strath. Big Sand.
Our plant is var. *angustisectum* Druce.

[264/1. CRITHMUM MARITIMUM L., the Samphire. Gairloch, *J. H. Dixon*, 1886, was probably a *Salicornia*.]

265. OENANTHE [Tourn.] L.

265/3. Œ. CROCATA L. *Water Dropwort.*
Native. Swampy places but preferring clear water. Local. P. July.
First record: the author, 1881.
Loch Duich. Loch Alsh. Ullapool. Applecross. Kishorn. Big Sand. Gairloch. Strath. Shieldaig.

[265/6. Œ. LACHENALII Gmel.
Gairloch, *Davidson* in *Scot. Nat.*, 1873. A likely plant to occur. It is recorded for Inverness and the Hebrides.]

266. AETHUSA L.

*266/1. Æ. CYNAPIUM L. *Fool's Parsley.*
Colonist. Cultivated ground. Rare. A. June-July.
First record: the author, 1893.
Between Jeantown and Strathcarron, 1893. Kishorn. Gairloch, *Dixon*.

270. MEUM [Tourn.] L.

270/1. M. MEUM (L.) Druce.
M. Athamanticum Jacq.
?Native. Rare. P. July
First and only record: *J. H. Dixon*, 1886.
Gairloch. *Dixon*.
It is recorded for Inverness, probably in error, and Argyle.

271. LIGUSTICUM L.

271/1. L. SCOTICUM L. *Scotch Lovage.*
Native. Sea sand and coast. Local. P. June-July.
First records: Gairloch. *J. H. Dixon*, 1886; *D. Russell*, 1896.
Still at Gairloch, 1926. Applecross, *Allen*, 1886. Summer Isles, *Lady Fowler*. Polglass. Mellon Charles. Port Henderson. Longa Island.
Doubtless this is the Celery reported from the Summer Isles.

274. ANGELICA [Tourn.] L.

274/1. A. SYLVESTRIS L. *Angelica.*
Native. Common and widely distributed. P. June-July.
First record: the author, 1881.
Gairloch. Loch Maree. Kintail. Loch Alsh. Applecross.
Var. DECURRENS Lallem. Ullapool. Cnochan, and probably elsewhere.

277. HERACLEUM L.

277/1. H. Sphondylium L. *Hogweed.*
Native. Waysides. Local. P. July.
First record: the author. 1881.
Attadale. Applecross. Gairloch. Little Sand.

282. DAUCUS [Tourn.] L.

282/1. D. Carota L. *Wild Carrot.*
Native. Roadsides and cultivated ground. Local. P July-August.
First record: *Allan* in *Tr. Bot. Soc. Ed.*, 1886.
Applecross, *Allan*. Coigach, *Lady Fowler*. Polglass. Ullapool. Gairloch. Little Sand. Mellon Charles.
This is the *D. maritimus* of Dixon's Gairloch List.

283. CAUCALIS L.

283/3. C. Anthriscus Huds. *Hedge Parsley.*
Native. Waysides. Rare. P. June-July.
First record: the author, 1893.
Jeantown. Applecross. Laid.

44. *CORNACEAE.*

285. CORNUS [Tourn.] L.

285/2. C. suecica L. *Dwarf Cornel.*
Native. Alpine. On Vaccinium moors. Descends to 1500 ft. Local. P. June-July.
First record: *Lightfoot Fl. Scotica*, 1777.
Loch Broom mountains, *Lightfoot*. Loch Maree, *Graham*, 1843. An Teallach. Strathcarron. Beinn Dearg. Beinn Liath Beag. Beinn Liath Mhor. Sgurr Mhor.

43. *ARALIACEAE.*

284. HEDERA [Tourn.] L.

284/1. H. Helix L. *Ivy.*
Native. Climbing up rocks or trees. Rare. November.
First record: the author, 1881.
Slioch. Gairloch. Laid. Balmacarra.

45. *CAPRIFOLIACEAE.*

287. SAMBUCUS [Tourn.] L.

*287/1. S. racemosa L. *Swiss Elder.*
Alien, Europe. On the ruins of a Kirk in Strathcarron. Inverlael, planted.

287/2. S. nigra L. *Elder.*
Doubtfully native. Rather rare. Tree. June-July.
First record: the author, 1881.
Strome. Jeantown. Ullapool. Poolewe. Gairloch.

288. VIBURNUM [Tourn.] L.

288/1. V. Opulus L. *Guelder Rose.*
Native. In damp shady places. Local. Small tree. June-July.
First found by the author, 1881. See *Top Bot.*, ed. 2.
Strome. Kinlochewe, 1881. Ullapool. Applecross. Kishorn.

286. ADOXA L.

286/1. A. Moschatellina L. *Moschatel.*
Native. Among rocks. Rare. P. June-July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Cnochan rocks.

[290. LINNAEA [Gronov.] L.

290/1. L. borealis L. In one of the islands in Loch Maree, *Davidson* in *Scot. Nat.*, 1873. Needs confirmation.]

291. LONICERA L.

291/2. L. Peri-Clymenum L. *Honeysuckle.*
Native. Not uncommon, especially on wooded, rocky slopes and in stream gorges. Climbing shrub. June-August.
First record: the author, 1881.
Slopes of Slioch. Ullapool. Strathcarron. Achiltibuie, *V. Buxton.* Gruinard. Poolewe. Dundonnell. Aultbea. Gairloch.

46. *RUBIACEAE.*

296. GALIUM L.

296/1. G. boreale L. *Upright Bedstraw.*
Native. In stony river beds and on banks, cliffs, etc. Local. Sea level to 2000 ft. P. July.
First record: *G. C. Smith* in *Top. Bot.*, 1874.
Sgurr Fhuaran. Beallach nam bo. An Teallach. Rhidorroch. Braemore. Mellon Charles, on sea-sand.
Var. stenophyllum Druce. Cnochan.

*296/3. G. erectum Huds.
Colonist. Rare, introduced with grass crops. P. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Strathcarron.

296/4. G. hercynicum Weig. *Heath Bedstraw.*
G. saxatile L.
Native. Common and generally distributed from the sea level to 3000 ft. P. June-August.
First record: the author, 1881.
Var. transiens Dr. Dundonnell.

296/5. G. pumilum Murr.
G. sylvestre Poll.
Native. On limestone rocks. Rare. P. July.
First found by the author on the Cnochan rocks, 1925.

296/6. G. ULIGINOSUM L. *Bog Bedstraw.*
Native. Lowland. Marshy places. Local. Rare. P. July.
First record: *J. H. Dixon*, 1886.
Gairloch, *Dixon*. Loch Maree, *Mr Justice Talbot*. Kinlochewe.

296/7. G. PALUSTRE L. *Marsh Bedstraw.*
Native. Lowland. Loch sides, marshes, etc. Rather common. P. July.
First record: the author, 1881.
Loch Maree. Kintail. Gairloch. Dundonnell, etc.
Var. WITHERINGII (Sm.). Duirinish, *Marshall* and *Shoolbred* in *Journ. Bot.*, 132, 1910. Braemore.

296/9. G. VERUM L. *Yellow Bedstraw.*
Native. Lowland. Absent from a large area but rejoicing in the fixed sand dunes. Local. P. June-August.
First records: the author, 1881; *J. H. Dixon*, 1886.
On shingle at Ullapool. Applecross. Strathcarron, 1893. Limestone at Achall and Kishorn. Achiltibuie, *V. Buxton*. Gairloch. On sea sand, Little and Big Sand, etc.

296/11. G. APARINE L. *Goose-grass Cleavers.*
Native. Lowland. Chiefly as a shingle plant. Local. P. June-August.
First record: the author, 1881.
Achiltibuie, *V. Buxton*. Strome. Ullapool. Applecross. Gairloch. Port Henderson. Aultbea.

47. *VALERIANACEAE.*

298. ASPERULA L.

298/1. A. ODORATA L. *Woodruff.*
Native. Lowland. In shaded places. Local. P. July.
First record: the author, 1881.
Loch Broom Churchyard, *Lady Fowler*. Strome. Ullapool. Jeantown. Dundonnell. Isle Maree.

300. SHERARDIA [Dill.] L.

*300/1. S. ARVENSIS L. *Field Madder.*
Colonist. Lowland. Cultivated fields. Rare. P. July.
First record: *E. F. Linton* in *Journ. Bot.*, 21, 1885, or *Rep. Bot. Rec. Club*.
Strome Ferry, *Linton*. Kinlochewe.

301. VALERIANA [Tourn.] L.

301/2. V. SAMBUCIFOLIA Mik. *Valerian.*
Native. Lowland. Wooded places, river gorges, etc. Rather common. P. July.
First record: the author, 1881.
Abundant in the ravine at Braemore. Cnochan. An Teallach. Loch Alsh, etc.

[301/3. V. DIOICA L. Gairloch, *J. H. Dixon*, 1886. Probably an error. It is on record for Sutherland.]

48. *DIPSACACEAE.*

308. SCABIOSA [Tourn.] L.

308/4. S. SUCCISA L. *Devil's Bit.*
Native. Common and generally distributed, ascending to 3000 ft. P. July-September.
First record: the author, 1881.

*308/5. S. ARVENSIS L.
Colonist. Lowland. Cultivated ground. Rare. P. July.
First record: the author, 1881.
Coigach croft, *Lady Fowler*. Dornie. Kinlochewe.

[S. COLUMBARIA L. Error. Gairloch, *J. H. Dixon*. Applecross, *Allan*, 1886.]

49. *COMPOSITAE.*

312. SOLIDAGO [Vaill.] L.

312/1. S. VIRGAUREA L. *Golden Rod.*
Native. Abundant and generally distributed in rocky places, gorges, mountain cliffs, from sea level to 3000 ft. P. July-October.
First record: the author, 1881.
Var. ANGUSTIFOLIA Gaud. Slioch. Loch Maree. Braemore, 1893. At the head of Loch Broom in fine condition.
Var. PLUKENETIANA Druce=*cambrica of British Plant List*, ed. 1. p.p. An Teallach, 2900 ft. Ben Eay.
Var. ACUTIFOLIA Druce. Fannich.
Var. LANCEOLATA Druce. River Broom side.

314. BELLIS [Tourn.] L.

314/1. B. PERENNIS L. *Daisy.*
Native. Lowland. Pastures. Widely spread. P. June-July.
First record: the author, 1881.
A discoid form near Inverbroom.

318. ASTER [Tourn.] L.

318/19. A. TRIPOLIUM L. *Sea Aster.*
Native. Lowland. Muddy or shingly margins of the coast. Local. P. July-October.
First record: the author, 1888.
Loch Torridon, *Journ. Bot.*, 21, 1881. Strathcarron. Jeantown. Aultbea. Applecross.
Var. GLABER Bolzon, with glabrous phyllaries. Poolewe.
Var. DISCOIDEUS Reichb. Aultbea. Poolewe.

326. ANTENNARIA Gaertn.

326/1. A. DIOICA (L.) Gaertn. *Mountain Cat's-foot.*

Native. Short grassy and heathy places on mountain shoulders. Widely distributed and locally common. Ascending to over 2000 ft. P. June-August.

First record: *Prof. Churchill Babington* in *Top. Bot.*, 1874.

Achiltibuie, *F. Buxton*. Loch Maree, *Mr Justice Talbot*. Cnochan. Sgurr Fhuaran. Ben Eay. Beinn Dearg. Gairloch. Ben Alligin. An Teallach. Slioch. Little Sand. Gairloch.

Var. PEDICELLATA F. B. White. Strathcarron Hills. Little Sand. Beinn Dearg.

327. ANAPHALIS DC.

*327/1. A. MARGARITACEA C. B. Clarke.

Alien, North America. Garden stray at Strath, *Druce*, 1925.

The Ross-shire plant is var. *subalpina* Gray.

328. GNAPHALIUM [Vaill.] L.

328/2. G. ULIGINOSUM L. *Marsh Cudweed.*

Native. Lowland. Wet places by roadsides, etc. Rare.

First record: the author, 1881.

Kishorn. Gairloch. Little Sand. Aultbea.

328/3. G. SYLVATICUM L. *Heath Cudweed.*

Native. Stony soils, local, ascending to 2500 ft. Not common. P. July-August.

First record: the author, 1881.

Kinlochewe. Torridon, *Salmon*. Coigach, *Miss Field*. Corrie Halloch, Braemore, *Lady Fowler*. Loch Maree, *Mr Justice Talbot*. Achiltibuie, *F. Buxton*. Courthill. Kishorn. Mellon Charles. Ben Eay.

I found the excessively rare *G. norvegicum* Gunn. in the Fannich Forest in E. Ross.

328/5. G. SUPINUM L. *Mountain Cudweed.*

Native. Alpine. Bare places on alpine slopes. P. July.

First record: the author, 1881.

Slioch, *Salmon*. Sgurr Fhuaran. Beinn Fiadha. Beallach nam bo. Ben Eay. Beinn Dearg. Sgurr Mhor. Beinn Liath Mhor.

365. ACHILLEA [Tourn.] L.

365/1. A. MILLEFOLIUM L. *Milfoil, Yarrow.*

Native. Lowland. Pastures, fixed sand dunes, etc.

First record: the author, 1881.

Var. RUBRA. Kishorn, etc.

Var. LANATA Koch. Bianasdail Glen. Mellon Charles.

365/11. A. PTARMICA L. *Sneezewort.*

Native. Lowland. Common and widely distributed. P. June-July.

First record: the author, 1881.

Loch Maree. Gairloch. Dundonnell. Braemore.

370. CHRYSANTHEMUM [Tourn.] L.

370/1. C. SEGETUM L. *Corn Marigold.*

Native? Locally common in oat fields, possibly originally introduced. A. April-September.

First record: the author, 1881.

Achiltibuie, V. *Buxton.* Gairloch. Melvaig. Strathcarron.

370/4. C. LEUCANTHEMUM L. *Ox-eye Daisy.*

Native. Lowland. In disturbed soils and pastures. Local. P. June-August.

First record: the author, 1881.

Attadale. Ullapool. Applecross. Kishorn. Achiltibuie. Flowerdale. Docharty.

*370/13. C. PARTHENIUM (L.) Bernh. *Feverfew.*

Alien. Garden stray. Strath.

371. MATRICARIA [Tourn.] L.

371/1. M. INODORA L. *Mayweed, Camomile.*

Native. Lowland. Common and widely distributed. In waste and cultivated soils by loch margins, sea cliffs and shores. P. June-September.

First record: the author, 1881.

Var. PHAEOCEPHALA Rupr. Kyle of Loch Alsh, *Marshall*, 1910. Gairloch. Melvaig.

[371/2. M. CHAMOMILLA L. Gairloch, *Dixon.* Probably an error.]

*371/3. M. SUAVEOLENS Buch.
M. discoidea DC.

Alien. N. W. America. In waste places on bare soils. Likely to spread. A. June-August.

First record: the author, 1907.

Kyle of Loch Alsh. Ullapool.

377. TANACETUM [Tourn.] L.

*377/1. T. VULGARE L. *Tansy.*

Alien. Probably introduced. Lowland. Road borders, foreshores and near houses. Rare. P. July.

First record: *Lightfoot Fl. Scotica*, 1777.

Side of Gairloch, *Lightfoot.* Side of Gairloch, *Dixon.* Achiltibuie, V. *Buxton.* Jeantown. Port Henderson. Strath.

[ANTHEMIS MARITIMA L. is a misnomer for MATRICARIA INODORA in Dixon's List.]

378. ARTEMISIA [Tourn.] L.

*378/1. A. ABSINTHIUM L. *Wormwood.*

Alien or error. Waste ground. P. July.

First record: *Allan* in *Scot. Nat.*, 1886.

Applecross.

378/3. A. VULGARIS L. *Mugwort.*
Native. Lowland. Waysides, near houses and foreshores. Local. P. July-August.
First record: the author, 1881.
Coigach, *Miss Field.* Ullapool. Melvaig. Gairloch. Laid. Mollan.
Var. COARCTATA Fors. Gairloch.

379. TUSSILAGO [Tourn.] L.

379/1. T. FARFARA L. *Coltsfoot.*
Native. Lowland. Fields and waysides. Not frequent. P. April.
First record: the author, 1881.
Kinlochewe. Dundonnell. Ullapool. Kishorn. Melvaig.

380. PETASITES [Tourn.] L.

380/1. P. PETASITES (L.) Karst.
P. officinalis Moench.
Native. Lowland. On burnsides. Rare. P. May.
First record: the author, 1881.
South side of Loch Duich. Gairloch. Shieldaig.

381. DORONICUM [Tourn.] L.

*381/1. D. PARDALIANCHES L. *Leopard's Bane.*
Alien. A garden straggler. P. July.
Shiel, the author, 1881.

383. SENECIO [Tourn.] L.

383/3. S. AQUATICUS Hill. *Water Ragwort.*
Native. Lowland. Damp waysides and fields. Locally common. P. July-September.
First record: the author, 1881.
Loch Maree. Ullapool. Gairloch.
Var. PENNATIFIDUS Gr. & Godr. Strath.
×JACOBAEA. Aultbea, 1926.

383/5. S. JACOBAEA L. *Ragwort.*
Native. Lowland. Abundant in pastures and the drier straths and hillsides. P. July-September.
First record: the author, 1881.
Var. DISCOIDEUS L. (*flosculosus*). Ullapool.
Var. CONDENSATA Druce. Mellon Charles.
Var. ABROTANIOIDES Murr. Between Poolewe and Dundonnell.

383/9. S. SYLVATICUS L. *Hedge Groundsel.*
Native. Lowland. Banks and roofs of cottages. Rather rare. A. June-August.
First found by the author, 1887.
On cottage roofs at Ullapool. Jeantown. Little Sand.

383/10. S. VULGARIS L. *Groundsel.*
Native. Lowland. In cultivated ground and on cottage roofs. Not common. A. February-September.
First record: the author, 1881.
Kinlochewe. Ullapool. Jeantown. Melvaig. Flowerdale.

385. CALENDULA [L.] L.

*385/1. C. OFFICINALIS L. *Marigold.*
Alien, Europe. Waste ground. Strath, 1926.

*385/2. C. ARVENSIS L. *Marigold.*
Alien. Europe. Waste ground. Strath, 1926.

393. ARCTIUM L.

393/2. A. NEMOROSUM Lej. *Burdock.*
Native. Waste places, sand dunes and foreshores. Local. B. July-August.
First record: the author, 1887, as *intermedium* Lange.
Kinlochewe. Torridon. Jeantown, 1893. Mellon Charles.

393/3. A. MINUS Bernh. *Burdock.*
Native. Lowland. Foreshores and waste places. Local. B. July.
First record: the author, 1881.
Mollan. Ullapool. Jeantown. Gruinard. Little Sand. Poolewe.

[A. MAJUS Bernh. = A. LAPPA L., given in Allan's Applecross List of 1886, is probably *A. nemorosum*.]

[CARDUUS NUTANS L., given in Dixon's Gairloch, is either a casual or misnomer.]

396. CIRSIUM [Tourn.] Mill.

396/2. C. LANCEOLATUM Scop. *Spear Thistle.*
Native. Lowland. Abundant and ascending in the grassy pastures to 1200 ft. B. June-October.
First record: the author, 1881.
Var. NEMORALE (Reichb.) Druce. Kinlochewe.

396/3. C. HETEROPHYLLUM Hill. *Melancholy Thistle.*
Native. Lowland. Wet grassy or rocky ground, ascending to 1500 ft. Local. B. July.
First record: *Prof. Churchill Babington* in *Top. Bot.*, 1874.
Strathcarron, *J. A. Webb.* Loch Maree side. Ullapool. Gairloch. Laid. Glen Shiel.
× PALUSTRE = WANKELII Reich. = CAROLORUM Jenner & Howie. Glen Shiel district. See *Tr. Bot. Soc. Ed.*, 1870.

396/8. C. ARVENSE Scop. *Common Thistle.*
Native. Lowland. Common and widely distributed in ground disturbed by man and on foreshores. Sometimes with whitish flowers. P. June-September.

First record: the author, 1881.
Var. MITE Koch. Jeantown.
Var. HORRIDUM W. & G. Kishorn. Strathcarron.

396/9. C. PALUSTRE Scop. *Marsh Thistle.*
Native. Lowland, ascending to 1000 ft. Pastures, woodlands, sides of straths, abundant. Sometimes with whitish flowers.
First record: the author, 1881.
Var. FEROX Druce. Big Sand.

401. SAUSSUREA DC.

401/1. S. ALPINA DC. *Alpine Saw-wort.*
Native. Alpine. Mountain cliffs, up to 3000 ft. Rare. P. July-August.
First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843.
Loch Maree [hills], *Graham*. Achnashellach, *J. A. Webb*. Flowerdale hills, *Lady Delia Peel*. Beinn Dearg. Sgurr Fhuaran. Sgurr-na-Caorach. Beallach nam bo.
The flowers have a strong odour of heliotrope.

405. CENTAUREA L.

405/7. C. NIGRA L. *Knapweed.*
Native. Common and widely distributed in pastures. P. July-August.
First record: the author, 1881.
Var. OBSCURA (Jord.). Mellon Charles. Ullapool.
Var. NEMORALIS (Jord.). Strome Ferry, as forma *alba*.

*405/12. C. CYANUS L. *Bluebottle.*
Colonist. Lowland. In cultivated soils. Very rare. A. July.
First record: *J. H. Dixon*, 1886.
Gairloch, *Dixon*. Kinlochewe.

409. CICHORIUM [Tourn.] L.

*409/1. C. INTYBUS L. *Chicory.*
Alien. In newly laid down pasture. Rare. P. July.
First record: Inverbroom, *Lady Fowler*, 1907.

411. LAPSANA [Tourn.] L.

411/1. L. COMMUNIS L. *Nipplewort.*
Native. Lowland. Rocky screes and waste places in scattered localities. A. July-August.
First record: the author, 1881.
Gairloch. Mellon Charles, on a disused boat. Strath.
Var. PUBESCENS Koch. On shingle at Ullapool.

416. CREPIS [Vaill.] L.

416/2. C. PALUDOSA Moench.
Native. In wet, grassy places and on cliff ledges. Common and widely distributed. Ascending to 1800 ft.
First record: the author, 1881.

416/5. C. CAPILLARIS Wallr.
C. virens L.
Native or Colonist. Lowland. Locally common, especially in newly laid down grass. B. June-August.
First record: the author, 1881.
Var. ANGLICA Druce & Thellung (*agrestis*) is the common, if not the only plant, as at Ullapool, Dundonnell, Applecross, Jeantown, Gairloch, and Strome.
Sub-var. GRISEOLA Thell. Big Sand. Mellon Charles.

[C. TECTORUM L. Dixon's Gairloch, 1886. An error for the preceding. Both this and *virens* are cited.]

419. HIERACIUM [Tourn.] L.

419/1. H. PILOSELLA L. *Mouse-ear Hawkweed.*
Native. Lowland, ascending to 1500 ft. Local and rare. Dry banks and open places. P. June-August.
First record: the author, 1881.
North side of Loch Duich. Gairloch. Ullapool. Ben Eay.
Var. NIGRESCENS Fr. Gairloch, the author, 1920.
Var. CONCINNATUS F. J. H. Mellon Charles, 1926.

*419/8. H. AURANTIACUM L. *Dusty Miller.*
Alien, of garden origin. Railway banks near Plockton, the author.

419/10. H. IRICUM Fr. *Hawkweed.*
Native. Lowland. On rock ledges. Rare. P. July.
First record: the author, 1893.
On the limestone at Kishorn. River gorge near Ullapool. On the Cnochan rocks.

419/11. H. ANGLICUM Fries. *Hawkweed.*
Native. On the mountains and in the ravines of the sub-alpine districts. Variable. Common. P. June-September.
First record: *Prof. Churchill Babington* in *Top. Bot.*, 1874.
Var. LONGIBRACTEATUM F. J. H. Slioch. Beallach nam bo. Loch Broom side. Near Ullapool. Cnochan.
Var. ACUTIFOLIUM Backh. Cnochan.
Var. CERINTHIFORME Backh. Cnochan.

419/18. H. RUBICUNDIFORME Zahn.
H. rubicundum F. J. H.
Native. Rocky places. Rare. P. July.
First record: Ullapool, the author, 1893.
Ben Eay, 1897, *Salmon*.

419/19. H. BOSWELLI Lint.
Native. Stream sides. Rare. P. July.
First record: *Salmon* in *Journ. Bot.*, 1897.
Stream near Kinlochewe. Ben Eay, *Salmon*.

419/22. H. SCOTICUM F. J. H.
Native. Lowland. Rocky places. Rare. P. July.
First found by the author. See *Rep. B.E.C.*, 119, 1926.
Cnochan rocks.

419/23. H. ALPINUM L.
H. melanocephalum Tausch.
Native. Alpine. On rocks and screes, 2000-2500 ft. Rare. P. July.
First certain record: the author, 1889.
Bey Eay, 1880. Beinn Dearg.
[Prof. Graham records *H. alpinum* from Loch Maree in *Tr. Bot. Soc. Ed.*, 1843, and Lightfoot included it in the *Fl. Scotica*, 1777, but the identity of this plant is uncertain.]

419/24. H. HOLOSERICEUM Backh.
Native. Alpine. Rocks from 2000-3000 ft. Rare. P. July.
First record: the author, 1887.
Ben Eay. Beinn Dearg.

419/28. H. GRANITICOLUM (W. R. Linton) Dr.
Native. Alpine. Mountain rocks. Rare. P. July.
First record: *C. E.* and *E. S. Salmon* in *Journ. Bot.*, 348, 1897.
From the Slioch.

419/30. H. GLOBOSUM Backh.
Native. Alpine. On mountain screes about 2300 ft. Rare. P. July.
First record: the author, 1889.
Probably this species on Ben Eay.

419/31. H. EXIMIUM Backh.
Native. Alpine. Quartzite rocks at over 2000 ft. Rare. P. July.
First record: the author, 1889.
Ben Eay.

419/32. H. TENELLUM (Backh.).
Native. On alpine quartzite rocks at over 2000 ft. Rare. P. July.
First record: the author, 1887.
Ben Eay.

419/33. H. SENESCENS Backh.
Native. Alpine rocks from 2000-2500 ft. Rare. P. July-August.
First record: *C. E.* and *E. S. Salmon*, *l.c.*, 1897.
The Slioch, *Salmon*. An Teallach.

419/36. H. CHRYSANTHUM Backh.
Native. Alpine rocks from 2000 to 2800 ft. Rare. P. July-August.
First record: the author, 1881.
Ben Eay. Sgurr Fhuaran. An Teallach. Beinn Dearg.

419/38. H. SUBNIGRESCENS Fr.
Native. On alpine rocks over 2000 ft. Rare. P. July.

First record: *C. E.* and *E. S. Salmon, l.c.*, 1897, as *H. atractum*.
The Slioch.

419/39. H. CURVATUM Elfst.
Native. Alpine. Grassy rock ledges. Rare. P. July-August.
First record: the author, 1887, as *nigrescens*.
The Slioch. Ben Eay.

419/41. H. LINGULATUM Backh.
Native. Alpine. On rock ledges. Not rare on the higher hills. Local. P. July-August.
First record: the author, 1887.
Ben Eay. Slioch, 3000 ft. An Teallach, 1893. Meall Gorm. Sgurr-na-Caorach. Mountain north of Loch Carron.

[419/50. H. SCHMIDTII Tausch.
Native. Rocky streamsides. Rare. P. June-July.
By the river north of Ullapool. Its identity is doubtful as it was over flower. Salmon records it in 1897 from near Kinlochewe.]

419/56. H. LEYI F. J. H.
Native. Rocky places. Local. P. July.
First record: *Salmon, l.c.*, 1897.
Slioch. Carn-a-Ghlinne. Kinlochewe.

419/64. H. CILIATUM Almq.
Native. Rocky places up to 1800 ft. Local. P. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Beallach nam bo. Cnochan. Applecross, *Ann. Scot. Nat. Hist.*, 103, 1911.

419/69. H. ARGENTEUM Fr.
Native. Stony places, rock ledges, etc. Local. P. July-August.
First found by the author in 1893.
Ben Eay, *Salmon*, 1897. Duirinish, *E. S. Marshall* and *Shoolbred* in *Journ. Bot.*, 135, 1910. Cnochan, 1893.

419/70. H. NITIDUM Backh.
Native. Rocky places. Rare. P. July-August.
First found by the author, 1902. See *Ann. Scot. Nat. Hist.*, 1903.
Braemore.

419/80. H. SOMMERFELTII Lindeb.
Native. Alpine. Mountain cliffs about 2000 ft. Rare. P. July.
First record: *Salmon, l.c.*, 1897.
The Slioch.

419/83. H. PELLUCIDUM Laest.
Native. Lowland. Rocky places. Local. P. July.

First record: the author in *Ann. Scot. Nat. Hist.*, 170, 1903.
Inverbroom. Braemore.

419/99. H. SUBULATIDENS Dahlst.
Native. Lowland. Rocky places. P. July.
First record: the author in *Ann. Scot. Nat. Hist.*, 170, 1903.
Braemore.

419/104. H. PACHYPHYLLIOIDES Zahn.
Native. Lowland. Rocky places. P. July.
First record: *Riddelsdell* and *Druce* in *Ann. Scot. Nat. Hist.*, 170, 1903.
Inverbroom.

419/112. H. LOENNROTHIANUM Zahn, var. LINTONI (Ley).
Native. Rocks near the sea. Rare. P. July.
First found by the author in 1925.

419/119. H. EXPALLIDIFORME Dahlst.
Native. Rocks near the sea. Rare. P. July.
Gairloch. See *Rep. B.E.C.*, 120, 1926.

419/121. H. RIVALE F. J. H.
Native. Rocky places. Rare. P. July.
First found by the author in 1925.
Cnochan rocks.

419/124. H. VULGATUM Fr., agg.
H. ornatum Dahlst.
Native. Rocky places. Descends to sea level. Locally abundant and variable. P. July.
First record: the author, 1881.

419/142. H. SUBRAVUSCULUM (W. R. Linton).
Native. Lowland. Stony places. P. July.
First record: the author in *Ann. Scot. Nat. Hist.*, 170, 1903.
Strome Ferry. Inverbroom.

419/144. H. SEJUNCTUM (W. R. L.).
Native. Lowland. Rocky places. P. July-August.
Kyle of Loch Alsh, *Marshall* and *Shoolbred*, 1910. Ullapool. Cnochan.

419/146. H. STENOLEPIS Lindeb.
Native. Lowland. Rocky places. Rare. P. July.
First found by the author, 1903.
Dundonnell. See *Ann. Scot. Nat. Hist.*, 170, 1904.

419/148. H. DURICEPS F. J. H.
Native. Rocky places. Rare. P. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Strathcarron.

419/159. H. caesium Fr.
Native. Rocky places, up to 1500 ft. Rare. P. July-August.
First found by the author in 1881.
Sgurr Fhuaran, teste *Boswell Syme*. Loch Duich, *H. N. Dixon*.

419/209. H. sparsifolium Lindeb.
Native. Lowland. Streamsides. Rare. P. July-August.
First record: the author, 1893.
By the River Broom with the form with blotched leaves, f. *aberrans cruentata*.

419/214. H. longiciliatum (F. J. H.) Zahn.
Native. Rocky places. Rare. P. July.
First record: the author, Cnochan, 1925.
Cnochan.

419/245. H. crocatum Fr.
Native. Lowland. Rocky places. Rare. P. July-August.
First record: the author, 1881.
North side of Loch Duich. Loch Maree.

419/232. H. Latobrigorum Zahn.
H. corymbosum Lint., p.p.
Native. Streamsides. Lowland. Rare. P. July-August.
First found by the author, see *Tr. Bot. Soc. Ed.*, 1893.
By the stream at Applecross.

419/233. H. reticulatum Lindeb.
Native. Streamsides. Rare. P. July.
First record: the author, 1893.
Ullapool.
This is probably the *H. praelongum* of my gathering in 1889 at Kinlochewe.

419/234. H. pseudoauratum (Zahn) Druce.
H. auratum Lint. p.p.
Native. Streamsides. Rare. P. July.
First record: the author, 1893.
River banks, Ullapool. By the River Carron, 1893.

421. HYPOCHAERIS [Vaill.] L.

421/2. H. radicata L. *Cat's-tail.*
Native. Lowland. Abundant and variable in cultivated and waste ground, pastures, roadsides, roof-tops, etc. P. June-September.
First record: the author, 1881.
In 1893 as one came down the Beallach nam bo Pass a band of yellow flowers was seen below the mansion house. In order to see what plant caused this effect, the place was visited and the colour was found to be due to a mass of this plant which grew at the junction of limestone with a bed of clay.

422. LEONTODON L.

[422/1. L. HISPIDUS L.
On the slopes of the Slioch occurred a plant which Mr Justice Talbot thought was *hispidus* but no specimen was taken. Lady Fowler recorded it for Inverbroom but her specimen was a form of the preceding species. It awaits verification.]

422/2. L. AUTUMNALIS L. *Yellow Devil's-bit.*
Native. Lowland, but ascending as a variety to 3000 ft. Pastures and grassy slopes. Abundant and variable. P. June-October.
First record: the author, 1881.
Var. PRATENSIS Koch. (*L. taraxaci*). Alpine form. Slioch. Ben Eay. Beinn Dearg. An Teallach, etc.
Var. SORDIDA Bab. with woolly involucres. Ullapool. Inverbroom.
A form with deeply cut leaves occurs at Inverbroom, Dundonnell, etc.

423. TARAXACUM [L.] Weber.

423/1. T. TARAXACUM (L.) Karst. *Dandelion.*
Native. Lowland up to 3000 ft. Common and widely distributed in many soils, situations and altitudes. P. April-October.
First record as the aggregate plant: the author, 1881.
The distribution of the microspecies is too imperfectly known to attempt to assign general habitats.

423/1. T. BRACHYGLOSSUM Dahlst.
Native. Lowland. Dry sandy soil. P. July.
First record: the author in *Rep. B.E.C.*, 121, 1926.
Strath.
This belongs to the red-fruited forms.

423/15. T. PALUDOSUM Schlecht.
T. palustre DC.
The aggregate was recorded by the author in 1881.
Gairloch. Dundonnell. Inverbroom. Kinlochewe.

423/23. T. FAEROENSE Dahlst.
Native. Hillsides. Local. P. July.
First record: the author, 1881.
Kinlochewe. Cnochan.

423/27. T. NAEVOSIFORME Dahlst.
Native. Lowland. Grassy places. Local. P. July.
First found by the author at Cnochan in 1925.

423/28. T. NAEVOSUM Dahlst.
Native. Damp places. Local. P. July.
First record: Gairloch, the author, 1925.

423/34. T. SPECTABILE Dahlst.
Native. Lowland. Damp waysides. Local. P. July.

First found by the author, 1893.
Braemore. Gairloch. Mellon Charles.

423/52. T. DILATATUM Lindeb. f.
Native. Lowland. Damp shady places. Local. P. July.
First record: the author in *Rep. B.E.C.*, 121, 1926.
Shieldaig. Flowerdale.

423/88. T. SUBLUTESCENS Dahlst.
Native. Lowland. Open ground. Local. P. July.
First record and new to science: the author, 1926.
Gairloch.

427. SONCHUS [Tourn.] L.

427/2. S. ARVENSIS L. *Corn Sow Thistle.*
Native. Lowland. In crops, on cottage roofs, among rocks, and on foreshores. Rather rare. P. July-September.
First record: the author, 1881.
Dornie. Dundonnell. Aultbea.

427/3. S. ASPER Hill. *Sow Thistle.*
Native. Waste places, seashore and garden ground. Local. A. July-October.
First record: the author, 1881.
Little Sand. Mellon Charles.
Var. LACINIATUS Lej. Ullapool, on shingle.
Var. INTEGRIFOLIUS Lej. Flowerdale. Mellon Charles.

437/4. S. OLERACEUS L. *Sow Thistle.*
Native. Not uncommon by the lowland crofts in cultivated ground. A. June-September.
First record: the author, 1881.
Loch Carron side. Kinlochewe. Ullapool. Poolewe. Gairloch.
Var. CILIATUS (Lam.)=*lacerus* Wallr. Gairloch. Shieldaig.

Note.—The following species of Compositae, not yet recorded for W. Ross-shire, occur in one or more of the bordering counties:—*Eupatorium cannabinum* in East Ross and Inverness; *Filago germanica* in East Ross and Inverness; *Carlina vulgaris* in East Ross and Skye; *Carduus nutans* in Skye; *Centaurea Scabiosa* and *Tragopogon pratensis* in West Sutherland.

50. *CAMPANULACEAE.*

431. LOBELIA [Plumier] L.

431/1. L. DORTMANNA L. *Water Lobelia.*
Native. Lochs, chiefly lowland. Locally plentiful and widely distributed. P. July-August.
First record: see *Top. Bot.*, 1874.
Coigach, *Miss Field.* Achiltibuie, *F. Buxton.* Loch Maree, *Mr Justice Talbot.* Loch a Chroi, *Lady Fowler.* Loch Achall. Loch Clair.

[Cervicina hederacea Dr. is included as a doubtful native in Dixon's Gairloch, 1886. Perhaps *Linaria Cymbalaria* was meant.]

435. CAMPANULA [Tourn.] L.

*435/4. C. Rapunculoides L. *Creeping Rampion.*
Alien. Near houses. Rare. P. July.
Gairloch, *J. H. Dixon*, 1886. A garden escape.

435/5. C. rotundifolia L. *Harebell.*
Native. In light soils. Very rare. P. July.
First record: the author, 1889.
Kintail. Braemore. Batty Park, *Lady Fowler*. Very local in the sands at Mellon Charles, 1926.

51. *VACCINIACEAE.*

438. VACCINIUM L.

438/1. V. uliginosum L. *Bog Whortleberry.*
Native. Alpine, from 2000-3000 ft. Damp mountain screes and ledges. Local. P. May-June.
First record: *Lightfoot Fl. Scotica*, 1777.
Little Loch Broom mountains, *Lightfoot*. Slioch, *Mr Justice Talbot*. An Teallach, 1893. Ben Eay. Meall Gorm. Beinn Dearg. Sgurr Mhor. Fannich. Beinn Fiadha.
Var. pubescens Hornem. Sgurr Fhuaran, first record as British.

438/2. V. Myrtillus L. *Blaeberry.*
Native. Common and widely distributed from near the coast level to 3500 ft. P. May-June.
First record: the author, 1881.
Var. prostratum Druce. Sgurr Mhor. Fannich.
Var. alpinum Big. = *microphyllum* Lange. Sgurr Mhor. Fannich.

438/3. V. Vitis-idaea L. *Cowberry.*
Native. Subalpine. Heathy ground, ascending to 3000 ft. Locally common. P. June-July.
First record: the author, 1881.
Slopes of the Slioch. Ben More. Coigach. Braemore. Ben Eay. Dundonnell. Cnochan. Glen Shiel. Sgurr Fhuaran. Beinn Dearg.
This is the Cranberry of northern Scotland.

439. OXYCOCCUS [Tourn.] Hill.

439/1. O. Oxycoccus (L.). *Cranberry.*
Native. Wet moors. Very rare. P. July.
First record: the author, 1881.
Moors above Loch Long.

52. *ERICACEAE.*

441. ARCTOSTAPHYLOS Adans.

441/1. A. Uva-ursi Sprengel. *Bearberry.*

Native. Dry heaths. Locally common. P. May-June.
First record: *Top. Bot.*, 1874.
Lieuthgoch. Ben Eay. The Slioch. An Teallach. Braemore. Coigach.
Var. ANGUSTIFOLIA Druce. A new British variety. An Teallach. Braemore.

441/2. A. ALPINA Spreng. *Alpine Bearberry.*
Native. Alpine. On the bare shoulders of the higher hills, from 1600-2200 ft., in full sun and wind exposure. Local. P. May-June.
First record: *Lightfoot Fl. Scotica*, 1777, as *Arbutus alpina*.
To the south of Little Loch Broom and between that lake and Loch Maree. Coigach Bennish, *Lightfoot*. On Scuir Lapaich the other side of Glen Cannich, *A. H. Evans*. North side of Loch Maree in abundance, *Balfour* in *Tr. Bot. Soc. Ed.*, 1844. Braemore, *Lady Fowler*. Ben Eay, 1600 ft. An Teallach, 2000 ft. Strathcarron, 2000 ft. North side of Strathcarron. Beinn Dearg. Meall a Chairn, 1300 ft. Sgurr Mhor.

443. GAULTHERIA [Kalm.] L.

*443/1. G. SHALLON Pursh.
Alien, N. America. Planted as a game cover.
Flowerdale, spreading by seed, the author. See *Rep. B.E.C.*, 123, 1926.

445. CALLUNA Salisb.

445/1. C. VULGARIS Hull. *Ling, Heather.*
C. Erica DC.
Native. Abundant and widely distributed from coast level to 3000 ft. P. July-October.
First record: the author, 1881.
Var. PUBESCENS Hull=*incana*. Kinlochewe. Dundonnell. Braemore, etc.
Var. ALBA. Ben Eay. Flowerdale. Summer Isles. Loch Maree.
Var. ARBORESCENS D. T. & H. Summer Isles.

446. ERICA [Tourn.] L.

446/1. E. CINEREA L. *Heather.*
Native. Lowland, ascending to 1500 ft. Common. P. July-September.
First record: the author, 1881.
Var. ALBA. Torridon.

446/2. E. TETRALIX L. *Cross-leaved Heath.*
Native. Abundant on lowland wet moors and ascending to over 2000 ft. P. July-September.
First record: the author, 1881.
Var. ALBA. Torridon. Shieldaig. Dundonnell, etc.

447. LOISELEURIA Desv.

447/1. L. PROCUMBENS Desv. *Trailing Azalea.*
Azalea procumbens L.

Native. Alpine. Rather frequent on the drier spots from 1600 to over 3000 ft. P. May-July.

First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843, as *Azalea procumbens.* See also Murray's *Northern Flora.*

Braemore, *Lady Fowler.* Descends to 1600 ft. on Ben Liath Mhor, *S. MacVicar.* Beinn Dearg. Sgurr Fhuaran. Beinn Fiadha. An Teallach.

452. RHODODENDRON L.

*452/1. R. PONTICUM L.

Alien. Loch Carron. Kerrydale, *J. A. Webb.* Freely seeding at Braemore.

453. PYROLA [Tourn.] L.

453/2. P. MEDIA Sw. *Winter-green.*

Native. Heathy places. Rare. P. July.

First record: the author, 1889.

Glenelg.

453/3. P. MINOR L. *Winter-green.*

Native. In heathy places. Rare. P. June-August.

First record: *Lightfoot Fl. Scotica,* 1777.

Little Loch Broom, *Lightfoot.* Gairloch, *Dixon.* Glen Docharty. A Ghairbhe, *Salmon.*

P. rotundifolia occurs in Sutherland.

453/4. P. SECUNDA L.

Native. Shady, heathy places, ascending to 1000 ft. Local. P. July-August.

First record: *Lightfoot Fl. Scotica,* 1777.

Wood called Cabuch near Little Loch Broom and about Loch Maree. *Lightfoot.* Caru-a-Ghlinne, *Salmon.* On limestone by the river at Ullapool.

Moneses occurs in E. Ross and E. Sutherland.

54. *PLUMBAGINACEAE.*

458. STATICE L.

458/2. S. PUBESCENS (Sm.). *Sea Thrift.*
S. linearifolia Lat.

Native. Maritime rocks. Abundant. P. May-October.

First record: the author, 1881, as *Armeria maritima.*

A very narrow leaved form occurs at Applecross.

458/3. S. PLANIFOLIA (Syme) Druce. *Mountain Thrift.*

Native. Alpine rocks and screes, ascending to 3600 ft. Local. P. June-August.

First found by the author in 1894.

The Slioch. An Teallach. Meall Gorm. Beinn Alligin.

55. *PRIMULACEAE.*

460. PRIMULA L.

460/2. P. VULGARIS Huds. *Primrose.*

Native. Common and widely distributed in the wooded straths, on sand dunes and glen sides. P. April-June.

First record: the author, 1881.

Cnochan. Gairloch. Loch Maree. Shieldaig. Kyle of Loch Alsh. Applecross. Glen Shiel.

[P. VERIS grows in W. Sutherland.]

463. LYSIMACHIA [Tourn.] L.

463/5. L. NEMORUM L. *Wood Pimpernel.*

Native. Lowland. Wooded places, wet banks, ascending to 1000 ft. Not rare. P. June-July.

First record: the author, 1881.

The Slioch. Loch Maree side. Braemore. Applecross. Dundonnell. Cnochan. Gairloch.

465. TRIENTALIS [Ruppius] L.

465/1. T. EUROPEA L. *Chickweed Winter-green.*

Native. Heathy places, ascending to 1500 ft. Rare. P. June-July.

First record: *J. H. Dixon*, 1886.

Gairloch. *Dixon.* Braemore. Coigach. Loch Maree, *Lady Fowler.* Ru Noa, *D. Russell* in *Scot. Nat.*, 163, 1900. At the head of Dundonnell road above Braemore.

466. GLAUX [Tourn.] L.

466/1. G. MARITIMA L. *Sea Milkwort.*

Native. Damp places on coast and sea marshes. Local. P. June-July.

First record: the author, 1881.

Torridon. Carron. Applecross. Ullapool. Gairloch. Coigach. Poolewe. Mellon Charles.

467. ANAGALLIS [Tourn.] L.

467/1. A. TENELLA Murray. *Bog Pimpernel.*

Native. Lowland. Boggy places. Rare. P. July-August.

First record: *J. H. Dixon*, Gairloch, 1886.

Applecross, *Allan.* Gairloch, *Dixon.* Achiltibuie, *V. Buxton.* Coigach. *Lady Fowler.*

[SAMOLUS VALERANDI occurs in Inverness and CENTUNCULUS MINIMUS in Skye. Both ought to be found.]

56. *OLEACEAE.*

471. FRAXINUS [Tourn.] L.

471/1. F. EXCELSIOR L. *Ash.*

Native. Local, on cliffs. Tree. May.

First record: the author, 1881.

Strome Ferry, *Rev. H. E. Fox*, 1893. Kintail. Glen Docharty. Gairloch. Dundonnell. Flowerdale, etc.

472. LIGUSTRUM [Tourn.] L.

*472/1. L. VULGARE L. *Privet.*
Probably alien. Shaded places. Rare. Shrub. June-July.
First record: the author, 1881.
Strome. Ullapool. Flowerdale.

59. *GENTIANACEAE.*

480. GENTIANA [Tourn.] L.

480/4. G. AMARELLA L. *Felwort.*
Native. Chiefly on limestone. Local. A. July-August.
First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843.
On limestone at Applecross, *Graham*. Loch Dearg. Near Loch Achall.

480/5. G. SEPTENTRIONALIS Druce.
Native. On sea sand. Locally common. A. July-August.
First record: the author in *Rep. B.E.C.*, 124, 1926, but I had found it previously.
Mellon Charles. Torridon.

480/9. G. CAMPESTRIS L. *Field Gentian.*
Native. Local and rather rare. A. or B. July-August.
First record: *Allan* in *Tr. Bot. Soc. Ed.*, 1886.
Forch Lodge, Braemore, *Lady Fowler*. Kinlochewe, *Salmon*. Loch Torridon. Coigach. Loch Maree side. Big Sand. Ullapool. Frick. Gruinard.
Var. ALBA. Ullapool. Little Sand. Gruinard.
Var. BALTICA (Murb.). Letterewe. *D. Russell*, 1894.

480/9. G. SUECICA Murbeck.
Native. Pastures. Rare. A. July.
First found by the author in 1926.
Little Sand. Identification agreed to by *Dr Lindman*. See *Rep. B.E.C.*, 408, 1927.

481. MENYANTHES [Tourn.] L.

481/1. M. TRIFOLIATA L. *Bogbean*
Native. Heathy pools. Local. P. June-August.
First record: the author, 1881.
Loch Maree. Ullapool. Applecross. Coigach. Achiltibuie. Flowerdale. Greenyard, etc.

[CENTAURIUM CENTAURIUM and C. VULGARE occur in E. Ross, the former also in Skye and the latter also in Inverness and Sutherland.]

62. *BORAGINACEAE.*

497. SYMPHYTUM [Tourn.] L.

*497/4. S. PEREGRINUM Ledeb. *Comfrey.*
S. asperrimum ? of Bieb.
Alien. Roadsides. Rare. P. July-August.

First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Inverlael. Ullapool. Poolewe.

[497/1. S. OFFICINALE L. Applecross, *Allan*, 1886. It is probably the foregoing. S. TUBEROSUM occurs in E. Ross.]

500. ANCHUSA L.

*500/1. A. SEMPERVIRENS L. *Evergreen Alkanet.*
Alien. Garden escape. Loch sides. Rare. B. July.
Loch Maree side, *Mr Justice Talbot*, 1925.

501. LYCOPSIS L.

*501/1. L. ARVENSIS L.
Colonist. Lowland. Cultivated ground. Local. B. July-August.
First record: the author, 1881.
Inverbroom, *Lady Fowler*. Dundonnell. Ullapool. Coigach. Little Sand.

505. PNEUMARIA Hill.

505/1. P. MARITIMA Hill. *Oyster Plant.*
Mertensia maritima (L.) Gray.
Native. Maritime shingle. Rare. P. July
First record: Gairloch, *J. H. Dixon*, 1886.
Side of Loch Duich.

506. MYOSOTIS L.

506/1. M. PALUSTRIS Hill. *Forget-me-not.*
Native. Lowland. Wet places. Rare. P. June-August.
First record: *Allan* in *Tr. Bot. Soc. Ed.*, 1886.
Applecross, *Allan*.
Var. STRIGULOSA (Reichb.). Gairloch.

506/3. M. REPENS Don. *Creeping Forget-me-not.*
Native. Lowland. Wet places. Local. P. July-August.
First record: *C. Bailey* in *Rep. Bot. Rec. Club*, 1883.
Kinlochewe, *Bailey*. Braemore, *Lady Fowler*. Strathcarron. Applecross. Duncraig. Poolewe. Gairloch. Longa Isle. Inverbroom.

506/4. M. CAESPITOSA K. F. Schultz.
Native. Lowland. Marshy places. Local. P. July.
First record: the author, 1881.
Strome. Applecross.

506/8. M. ARVENSIS (L.) Hill.
M. Scorpioides L.
Native. Lowland. Waste places and cultivated soils. Local. A. June-August.
First record: the author, 1881.
Kinlochewe. Ullapool. Applecross. Jeantown. Little Sand. Flowerdale. Longa.

506/9. M. COLLINA Roth.
Native. Lowland. Dry banks and walls. Rare. A. May-July.
First certain record: the author, 1887.
Kinlochewe. Ullapool. Gairloch, *Dixon*.

506/10. M. VERSICOLOR Sm. *Small Scorpion Grass.*
Native. Lowland. Wall tops, shingle and dunes. Not uncommon. A. June-August.
First record: the author, 1881.
Loch Maree, *Mr Justice Talbot*. Ullapool. Inverewe. Inverbroom. Gairloch.
Var. BALBISIANA (Jord.). Lubadavie.

63. *CONVOLVULACEAE.*

511. VOLVULUS Medic.

*511/1. V. SEPIUM Medic. *White Bindweed.*
Calystegia sepium Br.
Alien. Foreshores and shingle. Rare. P. July-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Achiltibuie, *V. Buxton*.
Var. COLORATUS (Lange). Jeantown, on shingly coast. Doubtless of garden origin.

511/4. V. SOLDANELLA Junger. *Sea Bindweed.*
Native. Maritime shingle. Rare. July-August.
First found by *Miss Field* at Coigach in 1912.

513. CONVOLVULUS [Tourn.] L.

*513/1. C. ARVENSIS L. *Corn Bindweed.*
Colonist. Lowland. Cultivated ground. Rare. P. July-August.
First found by the author at Loch Maree. See *Rep. B.E.C.*, 1926.

64. *SOLANACEAE.*

521. ATROPA L.

*521/1. A. BELLADONNA L. *Deadly Nightshade.*
Alien. Well established on cliffs at Gairloch where it was recorded in Anderson's *Guide to the Highlands and Islands of Scotland*, and also in Dixon's *Gairloch*, 1886. It still persists there.

65. *SCROPHULARIACEAE.*

532. LINARIA [Tourn.] L.

*532/1. L. LINARIA (L.). *Yellow Toad-flax.*
L. vulgaris Mill.
Alien. Of garden origin. Waste places. Rare. P. July-August.
First record: about the village of Strath, the author in *Rep. B.E.C.*, 127, 1926.

*532/26. L. CYMBALARIA (L.) Mill. *Ivy-leaved Toad-flax.*
Alien. Garden escape. Walls. Rare. P. July-August.
First found by the author on a wall at Ullapool. See *Tr. Bot. Soc. Ed.*, 1894.

535. SCROPHULARIA [Tourn.] L.

535/4. S. NODOSA L. *Figwort.*
Native. Lowland. Shady places in woods, by streams and on banks. Local. P. July-August.
First record: the author, 1881.
Achnashellach. Kinlochewe. Inverlael. Applecross. Dundonnell. Duncraig. Poolewe. Shieldaig. Gairloch.

[535/2. S. AQUATICA L., given in Dixon's *Gairloch*, 1886, is probably an error.]

537. MIMULUS L.

*537/1. M. GUTTATUS DC. *Monkey Flower.*
M. luteus auct.
Alien, of American origin, now rapidly spreading. Stream sides and marshy places. P. July-August.
First found by the author in 1881.
Loch Maree, *Mr Justice Talbot.* Loch Broom, *Lady Fowler.* Gairloch, *Dixon.* Lienassia, far from houses. Flowerdale. Little Sand.

537/2. M. MOSCHATUS Dougl. *Musk.*
Alien, of N.W. American origin. Well established in a marshy place P. July.
At Flowerdale, see the author in *Rep. B.E.C.*, 127, 1926. Scentless.

541. DIGITALIS [Tourn.] L.

541/1. D. PURPUREA L. *Foxglove.*
Native. Lowland, ascending to 1500 ft. Widely distributed but scarce about Gairloch. B. or P.
First record: the author, 1881.

543. VERONICA [Tourn.] L.

543/3. V. OFFICINALIS L. *Common Speedwell.*
Native. Heathy places, ascending to 2800 ft. Not uncommon. P. July-August.
First record: the author, 1881.
Glen Docharty. Kishorn. Braemore. Cnochan. Loch Maree. Gairloch.
Var. GLABRATA Bab. Loch Maree side.

543/4. V. CHAMAEDRYS L. *Germander Speedwell.*
Native. Common and widely distributed in the lowlands, on banks, loose rocks and heathy places, ascending to 1200 ft. P. June-July
First record: the author, 1881.
Var. LAMIIFOLIA Beck. Loch Maree side.

[V. MONTANA L. occurs in E. Ross, Skye and Easterness.]

543/6. V. SCUTELLATA L. *Marsh Speedwell.*
Native. Wet places in the lowlands, shallow rills and marshes. Local. P. June-August.
First record: the author. 1881.
Kyle of Loch Alsh, *Marshall.* Braemore, *Lady Fowler.* Loch Clair. Ullapool. Applecross. Loch Maree. Gairloch. Loch a Mhuilinn.
The glabrous plant alone has been noticed.

543/7. V. BECCABUNGA L. *Brook-lime.*
Native. Lowland. Wet places, marshes, rills and wet shingles. Local. P. June-August.
First record: the author. 1881.
Braemore, *Lady Fowler.* Jeantown. Applecross. Dornie. Ullapool. Gairloch. Inverbroom, very luxuriant.
The flower-tint is of a deeper blue than that of our Midland plant.

543/8. V. ANAGALLIS-AQUATICA L. *Water Speedwell.*
Native. Lowland. Ditches. Rare. P. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Kishorn. Near Courthill as the var. *Anagalliformis* Boreau, or more correctly the var. *divaricata* (Krösche) C. E. B. See *Rep. B.E.C.*, 313, 1927.

543/11. V. SERPYLLIFOLIA L. *Paul's Betony, Smooth Speedwell.*
Native. Widely distributed in damp, grassy places, damp walks and garden ground, wall tops, etc. Ascends to 2000 ft. P. May-August.
First record: the author. 1881.

[V. ALPINA and V. FRUTICANS are found in Westerness.]

543/12. V. HUMIFUSA Dicks.
Native. Alpine. Marshy spots and wet rocks. Rare. P. July.
First record: the author in *Rep. Bot. Rec. Club*, 1881.
Ben Fiadha, *H. N. Dixon.* The Slioch. A Glas Bheine.

543/15. V. ARVENSIS L. *Speedwell.*
Native. Lowland. Dry places and sand dunes. Local. A. June-July.
First record: the author. 1881.
Loch Broom side. Kinlochewe. Strome. Little Sand. Mellon Charles.

*543/18. V. TOURNEFORTII Gmel.
V. *Buxbaumii* Ten.
Colonist. Cultivated ground, increasing in frequency. A. May-August.
First record: the author in *Rep. B.E.C.*, 127, 1926.
Ullapool. Loch Maree. Strath. Aultbea.

*543/19. V. AGRESTIS L. *Field Speedwell.*
Colonist. Cultivated ground. Rare. A. June-August.

First record: the author, 1893.
Kinlochewe. Ullapool, in two forms. Gairloch.
Var. GARKIANA P. Fourn. Flowerdale, 1926.

*543/20. V. DIDYMA Ten. *Field Speedwell.*
V. *polita* Fr.
Colonist. Cultivated ground. Rare. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Jeantown.

*543/21. V. HEDERIFOLIA L. *Ivy-leaved Speedwell.*
Colonist. Rare, not yet seen by me. A. June-July.
Gairloch, *Dixon*, 1886.
It is found in E. Ross, Sutherland and Skye.

545. EUPHRASIA [Tourn.] L.

545/—. E. OFFICINALIS L. *Eyebright.*
Native. Common as the aggregate species.
First recorded by the author, 1881.

545/1. E. STRICTA Host. *Eyebright.*
Native. Lowland, ascending to 800 ft. Heaths and moorish ground. Rare. A. July-August.
First record: the author in *Rep. B.E.C.*, 408, 1927.
Glen Docharty. Gairloch.

545/2. E. BOREALIS Towns.
Native. Locally common and widely distributed in heathy and grassy ground. Ascends to 1000 ft. A. June-August.
First found by the author in 1887. See also *Ann. Scot. Nat. Hist.*, 128, 1897.
Glen Torridon. Ullapool. Applecross. Gairloch. Dundonnell. Cnochan. Braemore. Poolewe. Port Henderson.

545/3. E. BREVIPILA Burnat.
Native. Heathy ground and grassy places. Local. A. July-August.
First found by the author in 1881.
Kinlochewe. *Salmon*. Poolewe, *Townsend*. Ullapool. Dundonnell. Braemore. Loch Maree. Gruinard. Longa Island. Big Sand. Gairloch. Cnochan.
× SCOTICA = E. VENUSTA Towns. Poolewe.
× SCOTICA = E. ELECTA Towns. Moor near Loch Maree Hotel, *Townsend*.

545/5. E. NEMOROSA Pers.
Var. CILIATA Drabble.
Native. Lowland, ascending to 1000 ft. Moorish and heathy places. Local. A. July-August.
First record: the author in *Ann. Scot. Nat. Hist.*, 171, 1903.
Glen Docharty. Braemore.

545/7. E. HIRTELLA Jord.
Native. Lowland. Heathy places. A. July.
First found by the author, 1926. See *Rep. B.E.C.*, 410, 1927.
Glen Docharty.
The first Scottish record.

545/9. E. CURTA (Fr.) Wettst.
Var. GLABRESCENS Wettst.
Native. Lowland. Short grassy places. A. July. Cnochan.

545/12. E. LATIFOLIA Pursh.
Native. Lowland. Heathy ground. Rare. A. July.
First found by the author at Cnochan in 1925.

545/13. E. FOULAENSIS Towns.
Native. Lowland. Bare heathy ground near the coast. Local. A. July.
First record: Strathcarron, *W. A. Shoolbred* in *Journ. Bot.*, 481, 1899.
Mellon Charles. Isle of Longa.

545/15. E. MICRANTHA Reichb.
E. gracilis Fries.
Native. Heathy places, moors and grassy places amid rocks. Local. A. July.
First found by the author in 1881.
Slattadale, *C. Bailey* in *Rep. Bot. Rec. Club.*, 1883. Kinlochewe, *Salmon*. Poolewe. Loch Maree, *Townsend*. Bianasdail. Gairloch. Dundonnell. Ullapool. Braemore. Big and Little Sand.
Var. PRIMARIA (Towns.) Druce. Kinlochewe, *Townsend* in *Scot. Nat.*, 97, 1897.

545/16. E. SCOTICA Wettst.
E. paludosa Towns.
Native. Wet, moorish ground, ascending to 2000 ft. Locally common. A. June-August.
First found by the author in 1887.
Ben Eay, *Salmon*. Loch Maree. Loch Ewe, *Townsend*. Gairloch. Kinlochewe. Glen Docharty. Dundonnell. Ullapool.

545/19. E. ROSTKOVIANA Hayne.
Native. Chiefly lowland and grassy, heathy places. Locally common. A. June-August.
First found by the author in 1887.
Gairloch. Braemore. Mellon Charles.

546. BARTSIA L.

546/5. B. ODONTITES Huds. *Red Eyebright.*
Native. Lowland, chiefly littoral. Near the foreshore. Local, but widely distributed. A. July-September.
First record: the author, 1881.

Loch Duich. Jeantown. Applecross. Kishorn. Little Sand. Melvaig. Longa. Glen Shiel.

The W. Ross plants may be referred to var. *verna* Reichb.

547. PEDICULARIS [Tourn.] L.

547/1. P. PALUSTRIS L. *Marsh Lousewort.*

Native. Lowland. Bogs. Common. B. or P. July-August.

First record: the author, 1881.

Glen Shiel. Strathcarron. Applecross. Gairloch. Poolewe. Ullapool. Cnochan.

547/2. P. SYLVATICA L. *Lousewort.*

Native. Common and widely distributed in wet, heathy and grassy places, ascending to 1800 ft. B. or P. June-August.

First record: the author, 1881.

Kinlochewe. Ullapool. Braemore. Gairloch. Glen Shiel. On a turf covered wall top by Braemore.

Var. ALBA. On the moorland near the Falls of Glomach.

549. MELAMPYRUM [Tourn.] L.

549/3. M. PRATENSE L. *Cow-wheat.*

Native. Moors and heaths, ascending to 2800 ft. Locally common. A. July-August.

First found by the author in 1881.

Loch Maree. Applecross, *Allan*, 1886. Braemore. Loch Maree side. Dundonnell. Drumroonie. Eilean Maree.

Var. MONTANUM (Johnst.). An Teallach. Braemore. Achiltibuie.

Var. HIANS Druce. Strome.

[M. SYLVATICUM L. Gairloch, *Dixon*, 1886. Needs confirmation. It is in E. Ross.]

548. RHINANTHUS L.

548/1. R. MAJOR Ehrh.

Native or Colonist. Rare. A. July.

First record: as the var. *apterus* near Glencarron station, Darnish, *E. S. Marshall* in *Journ. Bot.*, 267. 1910.

548/3. R. CRISTA-GALLI L. *Yellow Rattle.*

Native. Lowland. Grassy places. Local. A. June-August.

First record: the author, 1881.

548/5. R. STENOPHYLLUS Schur. *Yellow Rattle.*

Native. Lowland. Heathy and grassy places. Local. A. July.

First found by the author, 1893. See *Ann. Scot. Nat. Hist.*, 171, 1903.

Loch Maree side. Ullapool. Polglass.

548/6. R. MONTICOLA Druce.

Native. Subalpine, on grassy slopes of hills. Rare. A. July-August.

First record: the author in *Ann. Scot. Nat. Hist.*, 171, 1903.
Beinn Dearg.
This species was added to science by the author from Munlochy in the Black Isle. It was described by Dr J. von Sterneck in his Monograph of the genus. So, too, was *R. borealis* from Scotland.

548/8. R. DRUMMOND-HAYI (Stern.) Dr.
Native. Alpine. Wet grassy places on mountain slopes and ledges, ascending to 2800 ft. Local. A. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Slioch. An Teallach. Kinlochewe. Beinn Dearg.

[R. BOREALIS Druce is in Inverness, Skye and E. Ross, and should be found.]

66. *OROBANCHACEAE.*

550. OROBANCHE [Tourn.] L.

550/3. O. ALBA Steph. *Broomrape.*
O. rubra Sm. *O. Epithymum* DC.
Native. Lowland. Parasitic on *Thymus*. Rare. A. July.
First record: *R. B. Bowman* in *New. Bot. Guide*, 1835.
Island near the mainland at Gairloch, *Bowman*. Also given in Dixon's Gairloch. I was unable to find it on Longa Island.

67. *LENTIBULARIACEAE.*

552. UTRICULARIA L.

552/2. U. MAJOR Schmid. *Bladderwort.*
U. neglecta Lehm.
Native. In the still water of pools and lochs. Rare. P. July-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Lochan Feith-an-Leothaid. Loch Glean na Muice, *Salmon*. Loch a Mhuilinn.

[U. VULGARIS is recorded for Skye and E. Ross. Unless in flower it is well nigh impossible to say if specimens are this or the preceding species.]

552/3. U. INTERMEDIA Dreves and Hayne.
Native. Lowland. Shallow watery places on moors. Rare. P. July.
First record: *Prof. Churchill Babington* in *Top. Bot.*, 1874.
Loch Maireannach. Loch Clair, *Salmon*. Glen Torridon. Kerrydale

552/4. U. OCHROLEUCA Hartm. *Bladderwort.*
Native. Lowland. Wet places in heathy ground. Local. P. July-August.
First record: the author in *Rep. B.E.C.*, 215, 1912.
Coigach.

552/5. U. MINOR L. *Small Bladderwort.*
Native. Still waters of pools and lochs. Rare. P. July.

First certain record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Gairloch, *J. H. Dixon.* Loch a Mhuilinn.

553. PINGUICULA L.

553/2. P. VULGARIS L. *Butterwort.*
Native. Wet moors, ascending to 2500 ft. Common and generally distributed. P. June-August.
First record: the author, 1881.
Var. ALPICOLA Reichb. A very large flowered form, with more contiguous petals, which *Dr Boswell* at first thought to be a form of *grandiflora*, on the slopes of A Glas Bheine in Kintail, its only known British locality.

[P. ALPINA L. was formerly found in the Black Isle of Cromarty. The habitat is now drained by *Pinus sylvestris.*]

553/4. P. LUSITANICA L.
Native. Lowland. Bogs. Local. P. July-August.
First record: *Hooker Fl. Scotica*, 1821.
Achiltibuie, *F. Buxton.* Loch Maree, *Mr Justice Talbot.* Coigach, *Miss Field.* Gairloch. Kintail. Ullapool.

70. *LABIATAE.*

558. MENTHA [Tourn.] L.

*558/2. M. ALOPECUROIDES Hull. *Mint.*
Alien. Waste ground as a relic of cultivation. P. August.
Gruinard, the author, 1886.

*558/3. M. LONGIFOLIA Huds.
M. sylvestris L.
Alien or error. Gairloch, *Dixon*, 1886.
× ROTUNDIFOLIA = M. VILLOSA Huds. Strath, 1926.

*558/4. M. SPICATA Huds. *Spearmint.*
M. viridis L.
Alien. Waste places. Of garden origin. P. August.
First record: the author, 1887.
On the beach at Jeantown.
Var. CRISPA (L.). Strath.

*558/6. M. PIPERITA L. *Peppermint.*
Alien. Waste places. Given in Dixon's Gairloch, 1886. Perhaps an error, but it occurrs in E. Ross, Sutherland and Inverness.

558/7. M. AQUATICA L. *Water Mint.*
M. hirsuta Huds.
Native. Wet places, ditches, streams, loch borders, etc. Widely distributed in the lowlands. P. July-September.

First record: the author, 1881.
Glen Docharty. Ullapool. Applecross. Kishorn. Gairloch. Aultbea.
Var. ORTMANNIANA H. Braun. Kinlochewe, 1881.
×LONGIFOLIA. Applecross, 1893, as *rubra*.

558/9. M. VERTICILLATA (L.).
M. sativa L. *M. aquatica*×*arvensis*.
Native. Lowland. Wet places. Rare. P. August-September.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Gairloch, *Dixon*. Applecross.

558/13. M. ARVENSIS L. *Field Mint.*
Native. Lowland. Wet and waste places, garden ground. Local. P. July-September.
First record: the author, 1881.
Side of Loch Duich.
Var. AUSTRIACA (Jacq.) Briq. Mellon Charles. Flowerdale. Aultbea. Gairloch.

559. LYCOPUS [Tourn.] L.

559/1. L. EUROPAEUS L. *Gipsy-wort.*
Native. Lowland. Damp, rocky ground, rough shingle by the coast. Rare. P. July-August.
First found by the author in 1881.
Kintail, 1881.
Var. PUBESCENS Benth. Strath. Little Sand.

561. THYMUS [Tourn.] L.

561/4. T. SERPYLLUM L. *Thyme.*
Native, and as the aggregate plant widely distributed, ascending to over 3000 ft.
First record: the author, 1881.
The var. PROSTRATUS Horn. was said to be found by Grieve, see *Scot. Nat.*
True *T. Serpyllum* occurs at Gairloch, Big Sand, Kintail, Ullapool, etc.; forma *Ericoides* W. & G. at Gairloch.

561/5. T. PYCNOTRICHUS Ronn.
Native. Heathy, rocky and sandy places. P. July-August.
First found by the author in 1881.
Loch Duich side. Gairloch. Kinlochewe. Cnochan. Gruinard. Melvaig. Aultbea. Big Sand.

561/8. T. Drucei Ronn.
Native. Dry sunny places on sandy or rocky soils, ascending to over 2000 ft. P. July-August.
First found by the author on Beallach nam bo in 1893.
Gairloch. Mellon Charles. Port Henderson. Big Sand. Cnochan.

561/9. T. ZETLANDICAUS Ronn. & Druce.
Native. Dry, rocky places, ascending to 2500 ft. Rare. P. July-August.
First found by the author on quartzite on Ben Eay in 1881.

561/10. T. NEGLECTUS Ronn.

Native. Heathy places. P. July.

First found by the author on Beallach nam bo in 1893.

561/11. T. BRITANNICUS Ronn.

Native. Rocky and sandy ground, ascending to 2000 ft. Local. P. July-September.

First found by the author in 1887.

Big Sand. Gairloch. Luichart Forest. Beallach nam bo.

569. NEPETA [Rivinus] L.

569/6. N. HEDERACEA (L.) Trev.
N. *Glechoma* Benth.

Native. Lowland. Shady soils. Uncommon. P. June-July.

First record: the author in *Tr. Bot. Soc. Ed.*, 1894.

Ullapool. Applecross. Dundonnell. Big Sand. Mellon Charles. Gairloch.

[N. CATARIA L. *Dixon*, Gairloch, 1886. Misnomer.]

572. SCUTELLARIA L.

572/1. S. GALERICULATA L. *Skull-cap.*

Native. Lowland. Wet, stony places. Local. P. July-August.

First record: the author, 1881.

Coigach, *Miss Field*. Strome. Jeantown. Applecross.

Var. LITTORALIS Druce. Port Henderson. Little Sand. Kishorn. Gairloch.

573. PRUNELLA L.

573/1. P. VULGARIS L. *All Heal.*

Native. Common and widely distributed in the lowlands, a conspicuous feature in some of the pastures. P. June-August.

First record: the author, 1881.

The flowers are distinctly longer than those of the Midland plant.

577. STACHYS [Tourn.] L.

577/3. S. SYLVATICA L. *Hedge Woundwort.*

Native. Lowland. Rather rare in rocky, woody and shady places. P. July-September.

First record: the author, 1881.

Kinlochewe. Applecross. Jeantown. Gairloch. Poolewe.

577/5. S. PALUSTRIS L. *Woundwort.*

Native. Lowland. Common in crops, on waste ground, foreshores, thatched roofs, etc. P. June-September.

First record: the author, 1881.

Var. CANESCENS Lange. Kinlochewe. Ullapool. Melvaig.

×S. AMBIGUA Sm. = S. PALUSTRIS × SYLVATICA.

First record: Near Jeantown, *Hooker Fl. Scotica*, 1821. Still there in 1893. *W. Borrer* and *Sir W. Hooker* found it by Loch Carron, see *Eng. Bot.*, t. 2889, which is doubtless the same locality. Aultbea.

*577/6. S. ARVENSIS L. *Upright Ground Ivy.*
Colonist. Lowland. Cornfields. Local. A. July.
First record: *P. Ewing* in *Scot. Nat.*, 186, 1891.
Coigach, *Miss Field.* Ullapool.

578. GALEOPSIS L.

*578/1. G. SPECIOSA Mill.
Colonist. Cultivated fields. Rare. A. July.
First record: *Prof. Churchill Babington* in *Top. Bot.*, 1874, as *G. versicolor.*
Gairloch, *Dixon.*
Not seen by me in the county.

578/2. G. TETRAHIT L. *Hemp Nettle.*
Native. Lowland. In oat crops. Local. A. June-September.
First record: the author, 1881.
Dornie. Kinlochewe. Ullapool. Dundonnell. Applecross. Jeantown. Gairloch. Invcrewe.
Var. BIFIDA (Boenn.) L. & C. In cultivated ground at Ullapool. Inverbroom. Jeantown. Gairloch. Shieldaig.
The white-flowered plant also is found and this was the *Lamium album* (*sic*) of the Gairloch List.

581. LAMIUM [Tourn.] L.

*581/3. L. PURPUREUM L. *Red Dead Nettle.*
Colonist. Lowland. Cultivated ground. Rare. A. June-September.
First record: the author, 1881.
Dornie. Strathcarron. Ullapool. Shieldaig. Flowerdale.

581/5. L. MOLLUCCELLIFOLIUM Fr. *Red Dead Nettle.*
Colonist or Native. Cultivated ground. Widely distributed as a lowland plant. A. June-August.
First record: the author, 1887, as *L. intermedium* Fr.
Ullapool. Aultbea. Little Sand. Kintail.

*581/6. L. AMPLEXICAULE L. *Henbit.*
Colonist. Lowland. Cultivated ground. Rare. A. June-September.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Inverbroom, *Lady Fowler.* Coulna Craig. Ullapool.

[L. HYBRIDUM is recorded for E. Ross and Sutherland.]

[L. ALBUM L. Gairloch, *Dixon*. 1886, but the specimen on which the record was founded proves to be white-flowered *Galeopsis Tetrahit.*]

586. TEUCRIUM [Tourn.] L.

586/1. T. SCORODONIA L. *Wood Sage.*
Native. Lowland. Dry, heathy ground. Common and widely distributed. P. July-August.

First record: the author, 1881.
On the lower slopes of Slioch. An Teallach. Beinn Dearg. Sgurr Fhuaran.

587. AJUGA L.

587/1. A. REPTANS L. *Bugle.*
Native. Mainly lowland. Shaded or grassy places. Not uncommon. P. June-August.
First record: the author, 1881.
Kinlochewe. Strathcarron. Jeantown. Applecross. Gairloch.

587/2. A. PYRAMIDALIS L. *Bugle.*
Native. Shaded places. Very rare. B. June.
Gairloch, *Dixon*. 1886.
Not seen by me in the county, but it is a likely plant to occur.

71. *PLANTAGINACEAE.*

588. PLANTAGO [Tourn.] L.

588/3. P. CORONOPUS L. *Buck's-horn Plantain.*
Native. Coastal and lowland. Waste and open spaces on dunes and waysides. Rare. P. July-August.
First record: *J. H. Dixon*. Gairloch (!), 1886.
Kyle of Loch Alsh, *J. A. Webb*. Coigach, *Lady Fowler*.

588/5. P. MARITIMA L. *Sea Plantain.*
Native. Common as a coastal plant, spreading inland to a considerable elevation on the hills as on Slioch. P. July-September.
First record: the author, 1881.
Var. PYGMAEA Lange. Ullapool.

588/8. P. LANCEOLATA L. *Rib Grass Plantain.*
Native. Lowland. Common and variable in pastures, arable ground, and foreshores. P. July-August.
First record: the author, 1881.
Var. CAPITELLATA Sonder. (*capitata* Presl). Jeantown. Big Sand.
Var. REPENS (Lange). On rocks at Jeantown.
Var. ERIOPHORA Rapin. Big Sand. Gruinard. Gairloch.

588/10. P. MAJOR L. *Plantain.*
Native. Lowland. In waste places, pastures, near houses and roadways, etc. Common. P. July-September.
First record: the author, 1881.
Loch Maree. Ullapool. Gairloch. Applecross. Jeantown.
Var. INTERMEDIA (Gilib.) Syme. Bare places by roads, and on foreshores. Aultbea. Ullapool. Jeantown, etc.

588/9. P. MEDIA L. *Plantain.*
?Native. Lowland. Pastures. P. July.
Near Talladale Pier, *D. Russell* in *Scot. Nat.*, 163, 1900; 103, 1901.

589. LITTORELLA Berg.

589/1. L. UNIFLORA Asch. *Shore-weed.*
L. juncea Berg. *L. lacustris* L.
Native. Loch bottoms. Locally abundant. P. July-August.
First record: the author, 1881.
Loch Maree. Loch Mhuilinn. Loch Achall.

72. *ILLECEBRACEAE.*

595. SCLERANTHUS L.

*595/2. S. ANNUUS L. *Knawell.*
Colonist. Lowland. Cultivated ground. Rare. A. July-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 155, 1894.
Kinlochewe.

74. *CHENOPODIACEAE.*

600. CHENOPODIUM [Tourn.] L.

*600/3. C. BONUS-HENRICUS L. *Good King Henry.*
Alien. Waste places. Rare. P. July-August.
First record: the author, 1881.
Dornie, but near houses.

*600/8. C. ALBUM L. *Goosefoot.*
Colonist. Lowland. Cultivated ground and waste places, foreshores, etc. A. July-September.
First record: the author, 1881.
Var. CANDICANS (Lam.). Little Sand. Melvaig. Ullapool. Strathcarron.
Var. VIRIDESCENS St Amans. (*paganum*). Ullapool. Dundonnell. Jeantown.

[C. MURALE L. and C. URBICUM L. in Dixon's Gairloch, 1886, are misnomers.]

606. ATRIPLEX [Tourn.] L.

606/3. A. PATULA L. *Orache.*
Native. Lowland. As a shingle plant and in cultivated ground. Local. A. July-October.
First record: the author, 1881, as *A. Smithii.*
Jeantown. Ullapool. Poolewe. Gairloch. Shieldaig. Melvaig.
Var. ANGUSTISSIMA Gren. & Godr. (*angustifolia* Sm.). Ullapool. Gairloch.

606/5. A. HASTATA L. *Orache.*
Native. Coastal, and on cultivated ground. Local. A. July-September.
First found by the author in 1881.
Strome. Ullapool. Port Henderson. Aultbea.

606/7. A. GLABRIUSCULA Edmonst.
A. *Babingtonii* Woods.
Native. Maritime shingle. Common. A. or P. August-October.
First record: the author, 1881.
Torridon. Ullapool. Loch Broom. Poolewe. Shieldaig. Applecross, 1913.
Var. BABINGTONII (Woods). The reddish coloured plant is perhaps the commoner form, as at Poolewe, Ullapool, Loch Carron side, etc.

[A. MARITIMA Hall. is recorded for Skye and Sutherland.]

611. SALICORNIA [Tourn.] L.

611/4. S. EUROPAEA L. *Samphire.*
Native. Muddy seashores. Local. A. August-October.
First found by *J. H. Dixon*, 1886, as an aggregate.
Applecross, *Allan.* Gairloch. *Dixon.* Plentiful by Loch Carron below Jeantown, 1893.

611/5. S. RAMOSISSIMA Woods. *Samphire.*
Native. Muddy seashores. Local. A. August-October.
First record: the author in *Rep. B.E.C.*, 130, 1926.
Near Shieldaig.

612. DONDIA Adans.

612/2. D. MARITIMA (L.) Druce. *Seablite.*
Suaeda maritima Dum.
Native. Sea coasts. Local on sand or small shingle. P. July-September.
First record: *Lightfoot Fl. Scotica*, 1777, as *Chenopodium maritimum.*
Loch Broom, *Lightfoot.* Loch Carron. Applecross. Kishorn. Little Loch Broom. Ullapool. Gairloch.
Var. ERECTA Moq.-Tand. Loch Carron.
Var. PROCUMBENS = VULGARIS (Moq.) Dr. Loch Carron.

613. SALSOLA L.

613/1. S. KALI L. *Saltwort.*
Native. Coastal. On shingle. Rare. P. August-September.
First record: Gairloch, *J. H. Dixon*, 1886.

76. *POLYGONACEAE.*

615. POLYGONUM [Tourn.] L.

*615/2. P. CONVOLVULUS L *Black Bindweed.*
Colonist. Lowland. Cultivated ground. Rare. A. July-October.
First record: Gairloch, *J. H. Dixon*, 1886.
Kinlochewe. Ullapool.

615/4. P. VIVIPARUM L.
Native. Alpine or Subalpine. Wet, grassy places. Rare. P. June-July.

First record: Gairloch, *J. H. Dixon*, 1886.
Beinn Fiadha, *J. H. Dixon*. Cnochan, 1894.

615/5. P. AMPHIBIUM L.
Native. Lowland. Wet places and pools. Rare. P. July-September.
First record: the author, 1881.
Dornie. Strath, as the land form, var. *terrestre*.

615/6. P. SCABRUM Moench.
P. lapathifolium auct.
Native or Colonist. Cornfields. Local. A. July-September.
First record: the author, 1881, as *P. lapathifolium*.
Ullapool. Dornie. Kinlochewe. Jeantown. Applecross.

615/7. P. PERSICARIA L. *Spotted Snakeweed.*
Native. Lowland. Chiefly in cornfields. A. July-September.
First record: the author, 1881.
Applecross. Strathcarron. Ullapool. Gairloch. Aultbea. Shieldaig, etc.

615/9. P. HYDROPIPER L. *Waterpepper.*
Native. Lowland. Damp places. Rather common. A. July-August.
First record: the author, 1881.
Kinlochewe. Ullapool. Gruinard. Strathcarron. Applecross.

615/14. P. AVICULARE L. *Knot-grass.*
Native. Lowland. Waste ground, sea shingle, etc. Common. A. June-October.
First record: the author, 1881.
Var. HETEROPHYLLUM (Lindm.) is the common form.
Var. MARINUM S. F. Gray. (*litorale*). Melvaig. Inverewe. Port Henderson.
This is doubtless the *P. maritimum* of Dixon's Gairloch, 1886.

615/15. P. EQUALE Lindm. *Knot-grass.*
Native. Lowland. Waste places. Rare. A. or B. August.
First record: the author, as *P. arenastrum*.
Melvaig.

*615/31. P. POLYSTACHYUM Wall.
Alien, India. Of garden origin. P. July-September.
Well established at Poolewe. Aultbea, probably owing its origin to the garden of *Mr Hanbury*. See *Rep. B.E.C.*, 131, 1926.

*615/32. P. CUSPIDATUM Sieb. & Zucc.
Alien, Japan. Likely to spread. P. July-October.
First record: the author, 1894.
Braemore. Aultbea. Flowerdale.

*615/33. P. SACHALINENSE Schmidt.
Alien, Saghalien Island. Of garden origin. P. August-October.
Braemore, 1894.

617. OXYRIA Hill.

617/1. O. DIGYNA Hill. *Mountain Sorrel.*
Native. Alpine, but brought down by streams to a low level. Wet rocky places, ascending to 3000 ft. P. July-October.
First record: the author, 1881.
Sgurr Fhuaran. Beinn Fiadha. An Teallach. Meall Gorm. The Slioch. Bey Eay. Beinn Dearg. Sgurr Mhor. On low levels, Glen Docharty, *J. A. Webb.* Near sea level, Duncraig Castle. On the sea beach at Applecross. Near Plockton.

618. RUMEX L.

618/2. R. LONGIFOLIUS DC.
R. domesticus Hartm.
Native. Lowland. Waste places, roadsides, and near dwellings. Local. P. July-October.
First record: the author.
Jeantown. Strathcarron, 1893.
×OBTUSIFOLIUS = R. ARNOTTII Druce = R. CONSPERSUS Arnott not of Hartmann. Strathcarron.

618/3. R. CRISPUS L. *Curled Dock.*
Native. Waste places, cultivated ground, pastures and shingles. Common. P. July-October.
First record: the author, 1886.
Var. TRIGRANULATUS Syme. Jeantown. Melvaig. Ullapool. Gairloch.
×OBTUSIFOLIUS = R. ACUTUS L. Strathcarron. Port Henderson.
×PROQUINQUUS = R. CRISPUS × LONGIFOLIUS. Strathcarron.

618/6. R. OBTUSIFOLIUS L. *Broad-leaved Dock.*
Native? Lowland. Waste places. Not rare. P. July-October.
First record: the author, 1881.
Strathcarron. Jeantown. Dornie. Ullapool. Achnashellach. Poolewe. Gairloch.

618/9. R. CONGLOMERATUS Schreb. *Sharp Dock.*
Native? Waste places. Rare. P. August.
First record: the author, 1881.
Strome. Ullapool.

618/14. R. ACETOSA L. *Sorrel.*
Native. Common and widely distributed in grassy and heathy places, ascending to 3500 ft. P. July-October.
First record: the author, 1881.

618/15. R. ARIFOLIUS All.
Var. SCOTICUS Dr. Native. Subalpine rocks, on ledges and in the damp talus. Rare. P. July-August.
First found by the author in 1925.
Cnochan rocks.

618/16. R. ACETOSELLA L. *Sheep's Sorrel.*
Native. Lowland. Common and generally distributed in dry pastures and rocky soils, ascending to 2000 ft. P. July-August.
First record: the author, 1881.

79. *ELAEAGNACEAE.*

625. HIPPOPHAE L.

*625/1. H. RHAMNOIDES L. *Sea Buckthorn.*
Alien. Planted on sand dunes. Shrub. July.
First record: the author, 1925.
Gairloch.

82. *EUPHORBIACEAE.*

628. EUPHORBIA L.

*628/7. E. HELIOSCOPIA L. *Sun Spurge.*
Colonist. Lowland. Cornfields. Rare. A. July-August.
First record: the author, 1887.
Kinlochewe. Dundonnell. Mellon Charles.

*628/14. E. PEPLUS L. *Petty Spurge.*
Colonist. Lowland. Garden ground. Rare. A. July-August.
First record: the author, 1887.
Kinlochewe. Strathcarron. Gairloch.

632. MERCURIALIS L.

632/1. M. PERENNIS L. *Herb Mercury.*
Native. Shady places. Very rare. P. July-August.
First record: Gairloch. *J. H. Dixon*. 1886.
Kintail.

83. *ULMACEAE.*

633. ULMUS [Tourn.] L.

633/1. U. MONTANA Stokes. *Wych Elm.*
U. campestris L., p.p. *U. glabra* Huds., p.p.
Native. Lowland. Cliffs and sides of glens, scattered through the county. Tree. March.
First record: the author, 1881.
Loch Duich. Strathcarron. Applecross. Dundonnell. Gairloch. Flowerdale.

633/2. U. HOLLANDICA Mill. *Dutch Elm.*
This is a planted hybrid as at Flowerdale.

*633/5. U. sativa Mill. *English Elm.*
U. suberosa Ehrh. *U. campestris* auct. ang.
Alien. As a planted tree, Gairloch, Braemore, etc.
First recorded by the author in 1881.

84. *URTICACEAE.*

634. HUMULUS L.

*634/1. M. Lupulus L. *Hop.*
Alien. Lowland. Roadsides, only of garden origin. Rare. P. July-August.
First recorded by the author in 1926.
Inverewe.

637. URTICA [Tourn.] L.

637/1. U. dioica L. *Nettle.*
Native. Lowland. Usually about houses, on foreshores and shingle. Widely distributed. Ascending to 1200 ft. P. July-September.
First record: the author, 1881.
Ullapool. Jeantown. Gairloch. Glen Shiel. Loch Alsh.

637/2. U. urens L. *Small Nettle.*
Native. Lowland. Waste places about dwellings and byres. Local and rare. A. July-August.
First record: *P. Ewing* in *Scot. Nat.*, 1892.
Common about Ullapool. Jeantown. Melvaig. Gairloch. Strath.

[Parietaria ramiflora is recorded for W. Sutherland.]

85. *MYRICACEAE.*

641. MYRICA L.

641/1. M. Gale L. *Sweet Gale.*
Native. Boggy places. Ascends to 1200 ft. Common and generally distributed. Shrub. April-June.
First record: the author, 1881.
Loch Broom, *Lady Fowler*. Achiltibuie, *V. Buxton*.

86. *AMENTACEAE.*

642. BETULA [Tourn.] L.

642/1. B. alba L. *Birch.*
Native. Mainly lowland, ascending to 1800 ft. Common and widely distributed. Tree. April-May.
First record: the author, 1881.
Loch Broom. Kinlochewe. Applecross. Coigach. Loch Duich. Achiltibuie. Dundonnell, etc.
Var. pendula Roth. Flowerdale. Dundonnell, etc.
× pubescens = B. hybrida Bechst. Braemore.

642/2. B. PUBESCENS Ehrh. *Birch.*
B. glutinosa Wallr. *B. tomentosa* Reith.
Native. Common and widely distributed in the straths and on peaty soils. Tree. April-May.
First record: the author, 1881.
Var. MICROPHYLLA E. S. M. (*parvifolia*). Kinlochewe. Strathcarron. Rhidorroch.

642/3. B. NANA L. *Dwarf Birch.*
Native. Subalpine up to 2800 ft. or more. Wet upland moors. Local. Shrub. June.
First records: Loch Glass [in E. Ross], *Lightfoot Fl. Scotica*, 1777. *Top. Bot.*, without personal authority, 1874. Gairloch. *Dixon*, 1886.
Fairly abundant about Braemore (!), *Lady Fowler*. Beinn Dearg, frequent. Beinn Liath Beag. By Loch Droma.

643. ALNUS [Tourn.] Mill.

643/1. A. ALNUS (L.) Karst. *Alder.*
A. glutinosa Gaertn.
Native. Lowland. Wet places, streams and loch sides. Common. Tree. April.
First record: the author, 1881.
Loch Maree side. Gairloch. Loch Alsh. Dundonnell. Inverbroom, etc.

645. CORYLUS [Tourn.] L.

645/1. C. AVELLANA L. *Hazel.*
Native. Lowland. Loch sides and glens. Not very common. Shrub. April.
First record: the author, 1881.
Strome. Kinlochewe. Loch Broom. Dundonnell. Loch Maree.

646. QUERCUS [Tourn.] L.

646/1. Q. ROBUR L. *Oak.*
Native. Woods. Lowland. Rare. Tree. May.
First record: *Prof. Balfour* in *Bot. Soc. Exc.*, i., 143.
Flowerdale. Braemore.

646/2. Q. SESSILIFLORA Salisb. *Sessile Oak.*
Native. Lowland. Straths. Local. Tree. May.
First record: the author, 1881.
Kinlochewe. Dundonnell. Jeantown. Applecross. Gairloch. Loch Duich.

647. CASTANEA [Tourn.] Mill.

*647/1. C. CASTANEA (L.) Karst. *Sweet Chestnut.*
C. sativa Mill. *C. vesca* Gaertn.
Alien, Europe. Rare. A planted tree. May.
First record: the author, in *Rep. B.E.C.*, 132, 1926.
Braemore. Flowerdale.

649. FAGUS [Tourn.] L.

*649/1. F. SYLVATICA L. *Beech.*
Alien. Planted. Rare. Tree. May.
First record: the author, 1881.
Gairloch. Braemore. Loch Duich.

87. *SALICACEAE.*

650. SALIX [Tourn.] L.

*650/1. S. PENTANDRA L. *Bay-leaved Willow.*
?Alien. Given in Dixon's Gairloch, 1886, but not seen by me in the county. It is recorded for Sutherland.

*650/2. S. FRAGILIS L. *Crack Willow.*
Doubtfully native. Lowland. Rare. Tree. May.
First record: the author, 1926.
Gairloch. Gruinard.

*650/3. S. ALBA L. *White Willow.*
Alien. Rare. A planted tree. May.
First seen by the author in 1881.
Gairloch, *Dixon*. Jeantown, etc.
Var. VITELLINA (L.) Stokes. Flowerdale.

*650/5. S. RUBRA Huds. *Red Willow.*
S. purpurea × *viminalis.*
Alien? Probably planted. Small tree. May.
First record: the author, 1881.
Inverlael. Kinlochewe. Gairloch.

*650/5. S. PURPUREA L. *Purple Osier.*
Alien. A small planted tree. May.
First record: the author, from Flowerdale in *Rep. B.E.C.*, 133, 1926.

650/6. S. VIMINALIS L. *Osier Willow.*
Possibly native but usually planted. Lowland. Small tree. May.
First record: the author, 1881.
Strome. Loch Broom. Jeantown. Melvaig. Letterewe.
Var. RUGOSA (Leefe). Kinlochewe, planted.

650/7. S.×SMITHIANA Willd.
A hybrid tree, probably planted. Rare. May.
First record: the author, 1887.
Loch Broom.

650/8. S. CAPREA L. *Goat Willow.*
Native. Lowland. Ravines and straths. Local. Tree. May.
First record: the author, 1881.
Braemore. Flowerdale.

650/9. S. AURITA L.
Native. Abundant in the lowland moors, ascending to 1500 ft. Shrub. May.
First record: the author, 1881.
Common about Kyle of Loch Alsh. Duirinish. Strathcarron, *Marshall.*
Var. MINOR And. Torridon.
× REPENS = S. AMBIGUA Sm. Gairloch, *Dixon.* Kishorn, 1893.

650/10. S. CINEREA L. *Grey Willow.*
Native. Usually lowland, ascending to 1200 ft. Common and variable in the straths, on the sides of ravines and gorges and round lochs. Small tree. May.
First record: the author, 1881.
Var. OLEIFOLIA (Sm.). Loch Maree side.

650/11. S. REPENS L. *Creeping Willow.*
Native. Heathy places and sandy coasts. Local. Shrub. May.
First record: the author, 1887.
Coigach, *V. Buxton.* Ben Eay. Kishorn. Gairloch. Mellon Charles.
Var. FUSCA (L.). Gairloch.

*650/13. S. PHYLICIFOLIA L.
Probably planted. Rare. Small tree. May.
First record: *Allan* in *Tr. Bot. Soc. Ed.*, 1886.
Applecross, *Allan.* Gairloch, 1926.

[S. ANDERSONIANA Sm. = S. NIGRICANS is included in Dixon's Gairloch, 1886, but needs confirmation.]

[S. MYRSINITES is reported from Sutherland and E. Ross and S. RETICULATA from Sutherland.]

650/16. S. LAPPONUM L.
Native. On alpine rocks. Very rare. Small shrub. June-July.
First record: *Mr Campbell* in *Top. Bot.*, 1874, without locality.

650/18. S. HERBACEA L. *Dwarf Willow.*
Native. Alpine. Rocky places. Local. Tiny shrub. June.
First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.* i., 202, 1843.
On the red sandstone below Ben Tarsham. Descends to 1500 ft. on Beinn Liath Mhor, *MacVicar.* Applecross, *Graham.* Ben Eay. An Teallach, 1893. Meall Gorm. Beinn Fiadha. Beinn Dearg. Sgurr Mhor. Fannich. Slioch. A large leaved form on a mountain N.W. of Loch Carron.

[S. RETICULATA L. *Dixon*, Gairloch, 1886, is perhaps an error for *aurita.* He also gives an *S. angustifolia.*]

651. POPULUS [Tourn.] L.

651/2. P. TREMULA L. *Aspen.*
Native. Rocky river sides, mountain cliffs, etc. Common and widely distributed. Tree. May.
First record: the author, 1881.
Achiltibuie, *V. Buxton*. Cnochan. Rhidorroch. Braemore. Dundonnell. Gairloch. Loch Maree. Strathcarron.

*651/5. P. DELTOIDES Marsh. *American Black Poplar.*
P. serotina Hart. *P. nigra* auct. non L.
Alien (?), N. America. As a planted tree. May.
First record: the author, 1881, as *nigra*.
Ullapool. Jeantown. Loch Duich.

*651/6. P. TACCAMAHACCA Mill. *The Ontario Poplar.*
P. candicans Ait.
Alien, N. America. A planted tree, as at Kinlochewe, etc.

88. *EMPETRACEAE.*

652. EMPETRUM [Tourn.] L.

652/1. E. NIGRUM L. *Crowberry.*
Native. Mountain heathy places. Abundant and widely distributed, descending to near sea level on Little Sand and on the Isle of Longa and ascending to 3400 ft.
First record: the author, 1881.

91. *ORCHIDACEAE.*

659. MALAXIS Sw.

659/1. M. PALUDOSA Sw. *Bog Orchid.*
Native. Wet, mossy bogs and slopes. Local. P. July-August.
First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.* i., 202, 1843.
Base of cliffs, Loch Maree, *Graham*. Near Loch Clair. Near river at Kinlochewe, *Salmon*. Gairloch, *D. Russell*. In Glen Docharty growing with *Hypnum revolvens*. Rather common on the shores of Loch Maree.

661. CORALLORRHIZA Châtel.

661/1. C. CORALLORRHIZA (L.) Druce. *Coral-root Orchid.*
C. innata Br. *C. trifida* Châtel.
Native. Wet woods. Very rare. P. June-July.
First record: *Lightfoot Fl. Scotica*, 1777, as *Ophrys corallorrhiza*.
In a moist, hanging wood called Cabal, on the south side, near the head of Little Loch Broom, *Lightfoot*.
Repeated search has been made for it about Dundonnell but hitherto without success.

663. LISTERA Br.

663/1. L. OVATA Br. *Twayblade.*
Native. Grassy, shady places, or on open grassy dunes or woodlands. Local. P. July-August.

First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 302, 1843.

Seems to be limited to the limestone or calcareous sea sand, Applecross. *Graham*. Cnochan, *Lady Fowler*. Achiltibuie, *V. Buxton*. Near Ullapool. Kishorn. Little Sand. With a slender form at Mellon Charles.

663/2. L. CORDATA Br. *Small Twayblade.*

Native. Heathy places, often in shade of bracken. Local. P. July.

First record: *Lightfoot Fl. Scotica*, 1777, as *Ophrys cordata*.

About Little Loch Broom, *Lightfoot*. Near Loch Broom, *Lady Fowler*. Loch Maree. On the limestone near Ullapool. Near Dundonnell. Rhidorroch.

665. GOODYERA Br.

665/1. G. REPENS Br.

Native. Woods. Very rare. P. July.

First record: *Lightfoot Fl. Scotica*, 1777, as *Satyrium repens*.

Among the Hypna in an old shady, moist, hanging birch wood called Cabal, or Yellowhill, facing the house of Mr Mackenzie of Dundonnell, about two miles from the head of Little Loch Broom, *Lightfoot*, and first as British. Its association with the name of Goodyer arose from a mistake of Robert Brown's thinking it was the orchid mentioned by Goodyer in Gerard's *Herbal*. Its older name is *Epipactis repens*.

This has hitherto evaded my search.

667. CEPHALANTHERA Rich.

667/3. C. LONGIFOLIA Fritsch. *White Helleborine.*
C. ensifolia Rich.

Native. Lowland. Wooded places. Very rare. P. July.

First record: *Dixon*, Gairloch, 1886.

Dr Mackenzie (1800-25) says "the braes and wooded hillocks of Gairloch were a perfect jungle of every kind of loveable shrub and wild flower . . . some of the Epipactis tribe being everywhere a lovely . . ." Dixon says *Epipactis ensifolia*, formerly abundant, is now almost unknown. In June 1883 I discovered one plant on a stony place by water. In 1885 two plants were seen at the same place.

668. HELLEBORINE [Dill.] Mill.

668/1. H. LATIFOLIA Druce.

Native. Lowland. Wooded places. Rare. P. July-August.

First record: *Epipactis latifolia* with pale flowers on the limestone at Applecross, *Prof. Graham* in *Tr. Bot. Soc. Ed.* i., 302, 1843.

Loch Broom, *Lady Fowler*, 1912.

A form of this (perhaps *atroviolacea*) was recorded as *Cephalanthera rubra* by *A. Webster* in *Gard. Chronicle*, 109, 1921, from Gairloch.

[H. ATROPURPUREA (Rafn.) Druce grows in W. Sutherland.]

669. ORCHIS [Tourn.] L.

[669/6. O. LATIFOLIA L. Duirinish. Strathcarron, *E. S. Marshall*. This is *O. praetermissa* or its hybrid.]

669/7. O. INCARNATA L. *Marsh Orchid.*
Native. Lowland. Marshy places, and wet sandy places. Local. P. July-August.
First record: the author, 1881.
Loch Duich. Rhidorroch. Gairloch.
Var. PULCHRIOR (*pulchella*) Druce. Gairloch.

669/8. O. PRAETERMISSA Druce. *Marsh Orchid.*
O. latifolia L., p.p.
Native. Lowland. Marshy places. Locally common. P. July.
First record: the author, 1881, as *latifolia*.
Coigach, *Miss Field*. Duirinish, *Marshall*, as *latifolia*, in *Journ. Bot.*, 132, 1910. Ullapool. Dundonnell. Poolewe. Strathcarron.
Var. PULCHELLA Druce. Often on wet places of shell-sand. Poolewe. Ullapool. Coigach. Cnochan. Little Sand.

669/9. O. PURPURELLA Steph.
?*O. maculata* × *praetermissa* var. *pulchella*.
Native. Moist places. Local. P. July.
First found by the author, 1925.
Gairloch. Poolewe.

669/10. O. MACULATA L. *Spotted Orchid.*
O. ericetorum. *O. praecox* Webster. *O. elodes* Griseb.
Native. Heathy moors, ascending to over 2000 ft. Abundant and widely distributed. P. July-August.
First record: the author, 1881.
Kinlochewe. Torridon. Port Henderson. Gairloch. Isle of Longa, very beautiful specimens. Aultbea. Dundonnell. Inverbroom. Braemore. Rhidorroch, etc.
Var. MACROGLOSSA Dr. Mellon Charles.
Var. CANDIDISSIMA (Weber) Dr. (*leucantha*). Braemore.
× PRAETERMISSA = O. HALLII Dr. Poolewe. Cnochan.

669/11. O. FUCHSII Druce. *Spotted Orchid.*
Native. Lowland. On calcareous sea sand. Rare. P. July.
First record: the author in *Rep. B.E.C.*, 135, 1926.
With *Anthyllis* at Little Sand.

669/14. O. MASCULA L. *Early Purple Orchid.*
Native. Grassy places and rocky ledges, ascending to 1200 ft. Local. P. July.
First record: the author. 1881.
Strathcarron, *MacVicar*. Ullapool. Rhidorroch. Cnochan. Jeantown. Gairloch. Dundonnell. Strome.

[672. OPHRYS L.

672/5. O. MUSCIFERA Huds. *Fly Orchid.*

Mr B. Savile Ogle brought a root of an orchid which he found near Achnashellach to his garden in Oxfordshire and he believes a plant of the fly orchid which flowered there was from the Ross-shire root. Confirmatory evidence is needed before it can be admitted to the flora.]

[HERMINIUM MONORCHIS Br. *Dixon*, Gairloch, 1886. An impossible plant. Probably *Malaxis* was meant.]

674. HABENARIA Willd.

674/1. H. GYMNADENIA Druce. *Fragrant Orchid.*

H. conopea Benth. not of Planch. *Gymnadenia conopsea* Br. *Platanthera.*

Native. Lowland. Marshy places. Local. P. July.

First record: *C. Bailey* in *Rep. Bot. Rec. Club*, 1883.

Gairloch, *C. Bailey*, 1883. Duirinish, *Marshall*, 1910. Kishorn. Rhidorroch. Cnochan. Strome. Little Sand. Laid. Isle of Longa. Mellon Charles.

674/3. H. ALBIDA Br.

Native. Lowland. Grassy places. Rare. P. July.

First record: Gairloch, *Dixon*, 1886.

Plentiful about Kinlochewe, *D. Russell* in *Scot. Nat.*, 108, 1910. Gairloch, *Dixon*. On limestone near Ullapool. Rather plentiful near Rhidorroch.

674/4. H. VIRIDIS Br. *Frog Orchid.*

Coeloglossum viride.

Native. Grassy places, preferring limestone, chiefly on calcareous soils. Local. P. July-August.

First record: *Allan* in *Tr. Bot. Soc. Ed.*, 1886.

Applecross, *Allan*. Near Ullapool. Cnochan. Kishorn. Little Sand. Mellon Charles. Abundant and with branched spikes at Kishorn.

Var. VAILLANTII (Ten.) Fernald. (*bracteata* A. Gray.). Cnochan.

674/6. H. VIRESCENS Druce. *Large Butterfly Orchid.*

H. chloroleuca Ridley.

Native. Lowland. Moist, heathy places. Local. P. July-August.

First record: Gairloch, *Dixon*, 1886.

Duirinish, *Marshall*. Gairloch. *Dixon*. Applecross, *Allan*. Grass fields near Dundonnell. Poolewe. Mellon Charles.

674/7. H. BIFOLIA Br. *Butterfly Orchid.*

Native. Lowland. Boggy, heathy places. Local. P. July-August.

First record: the author, 1881.

Duirinish, *Marshall*. Loch Torridon. Strome. Loch Duich. Rhidorroch. Duncraig. Dundonnell. Poolewe. Little Sand.

92. *IRIDACEAE.*

676. IRIS [Tourn.] L.

676/1. I. Pseudacorus L. *Yellow Flag.*
Native. Lowland. Swampy places, especially near the sea, often in great masses. P. July.
First record: the author, 1881.
Achmore. Ullapool. Kishorn. Applecross. Jeantown. Gairloch. Port Henderson, etc.

683. TRITONIA Ker-Gawl.

*683/1. T. crocosmiflora Nicholson. *Montbretia.*
Alien, of garden origin. An escape likely to become naturalised at Strath. See *Rep. B.E.C.*, 136. 1926.

95. *LILIACEAE.*

702. ALLIUM [Tourn.] L.

702/6. A. ursinum L. *Ramsons.*
Native. Lowland. Wooded places. Local. P. July.
First record: the author, 1881.
A Ghairbhe, *Salmon.* Loch Duich, *H. N. Dixon.* Braemore, *Lady Fowler.* Strome. On steep rocks by the waterfall at Jeantown, 1893. Cnochan rocks.

[702/9. A. oleraceum L. *Garlic.*
? Native. Given in Dixon's *Gairloch*, 1886, but needs confirmation.]

[Convallaria majalis is found in Easterness.]

706. SCILLA L.

706/1. S. non-scripta H. & L. *Blue Bell, Wild Hyacinth.*
S. nutans Sm. *S. festalis* Salisb.
Native. Lowland, but ascending to 1000 ft. Widely distributed and locally common on grassy banks, rock ledges, wooded and ferny slopes. P. May-June.
First record: the author, 1881.
Isle on Loch Maree. Ullapool. Braemore. Gairloch. Inverewe. Mellon Charles, etc.

[S. verna grows in Skye and Sutherland, and Gagea lutea in Easterness.]

714. NARTHECIUM [Moehr.] Huds.

714/1. N. ossifragum Huds. *Lancashire Asphodel.*
Native. Lowland, but ascending to 2500 ft. or more. Boggy places. Abundant. P. July-August.
First record: the author, 1881.
The flowers have a clove-pink like perfume.

715. TOFIELDIA Huds.

715/1. T. PALUSTRIS Huds.

Native. Mountain, boggy places, and by mountain rills, ascending to 2000 ft. Local. P. July-August.

First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.* i., 202, 1843.

Loch Maree, *Graham*. Braemore, *Lady Fowler*. The Slioch. Ben Eay. Beinn Dearg. Beinn Liath Beag. An Teallach. Loch Droma.

97. *JUNCACEAE.*

718. JUNCUS [Tourn.] L.

718/3. J. CONGLOMERATUS L. *Clustered Rush.*

Native. Wet places. Abundant and generally distributed in wooded places, ravines and gorges. P. July-August.

First record: the author, 1881.

Kinlochewe. Torridon. Applecross. Gairloch. Loch Maree. Coigach.

718/4. J. EFFUSUS L. *Soft Rush.*

Native. Wet places, in damp woods, on ledges, in ravines, etc. Common and widely distributed. P. July-August.

First record: the author, 1881.

Glen Docharty. Strathcarron. Applecross. Gairloch, etc.

[J. EFFUSUS×INFLEXUS is reported in *Scot. Nat.*, 169, 1889, but there is no evidence of the occurrence of J. INFLEXUS (GLAUCUS) in W. Ross.]

[J. INFLEXUS is recorded for Easterness.]

718/9. J. ACUTIFLORUS Ehrh. *Rush.*

J. sylvaticus Reich.

Native. Wet places and marshy ground. Not uncommon. P. July-August.

First record: the author, 1881.

Braemore. Dundonnell. Gairloch, etc.

718/10. J. ARTICULATUS L. *Jointed Rush.*

Native. Wet places, moors, marshes, rill sides, loch borders and shingles. Common and generally distributed in the lowland areas and ascending to 2000 ft. P. July-August.

First record: the author, 1881, as *J. lampocarpus* Ehrh.

Strathcarron. Applecross. Gairloch. Longa. Ullapool. Coigach. Braemore, etc.

Var. NIGRITELLUS (Don) Dr. Margins of Loch Maree. Gairloch. Loch Broom.

718/12. J. BULBOSUS L. *Lesser Jointed Rush.*

Native. Common and generally distributed in wet ground, bogs, marshes, shallow runnells and streams, ascending to 3000 ft. P. July-August.

First record: the author, 1881, as *J. supinus* Moench.

Var. KOCHII Druce. Strome Ferry, *E. F. Linton*, 1885. Gairloch.

Var. FLUITANS (Fries) Dr. Loch a Mhuilinn. Gairloch. Loch Maree.

Var. ULIGINOSUS (Fries) Druce. Glen Docharty. Ullapool. Aultbea. Braemore.

718/13. J. SQUARROSUS L. *Hard Rush.*
Native. Heathy moor, ascending to 3000 ft. Common. P. July-August.
First record: the author, 1881.

[718/14. J. COMPRESSUS Jack.
Attadale yielded specimens which were named *compressus* by Boswell-Syme but they were young and I believe them to be *Gerardi.*]

718/15. J. GERARDI Lois.
Native. Maritime. Common on borders of muddy shingles and on short turf. P. July-August.
First record: the author, 1881.
Common on the side of Loch Carron. By the mouth of the river at Ullapool. Kishorn. Dundonnell. Port Henderson. Shieldaig. Gairloch. Inverewe. Aultbea.
Var. GRACILIS Dr. Aultbea.

718/17. J. BUFONIUS L. *Toad Rush.*
Native. Common and widely distributed in the lowlands, on moist ground, road gullies, etc. A. July-August.
First record: the author, 1881.
Strathcarron. Kintail. Applecross. Braemore. Ullapool. Gairloch, etc.
Var. FASCICULARIS Koch. Gairloch. Little Sand.

718/21. J. TRIGLUMIS L.
Native. Alpine. Boggy places and wet rock ledges, ascending to 2800 ft. Rare. P. July-August.
First recorded by *Churchill Babington* in *Top. Bot.*, 1874.
An Teallach. Sgurr Fhuaran. Beinn Fiadha. Meall Gorm. Beinn Dearg. Sgurr Mhor. Fannich. The Slioch. Beallach nam bo.

[J. CASTANEUS grows in Easterness and J. BIGLUMIS is reported for Skye.]

718/23. J. TRIFIDUS L.
Native. Growing on alpine rocks up to 3500 ft. Local. P. July-August.
First record: *Lightfoot Fl. Scotica*, 1777.
Mountains near Little Loch Broom. *Lightfoot.* Plentiful on the ridges of Ben Eay. Slioch. Ben More Coigach. An Teallach. Sgurr Fhuaran. Beinn Fiadha. Meall Gorm. Sgurr Mhor. Fannich. Beinn Dearg. Beallach nam bo.
Descends to 1000 ft. on a mountain north-west of Strathcarron.

719. JUNCOIDES Adans.

Luzula DC.

719/1. J. SYLVATICUM (Huds.) Druce. *Large Wood Rush.*
Native. Wooded places, ravines and gorges and on mountain cliffs and slopes. Common. P. July-August.

First record: the author, 1881, as *Luzula maxima*.

Abundant and a striking feature at Dundonnell. Braemore. Loch Alsh. Gairloch. Ullapool. Loch Maree. Beinn Dearg. Plockton. Applecross. Falls of Glomach.

Var. GRACILE (Rostr.) Groves. Cnochan.

719/2. J. PILOSUM Morong. *Wood Rush.*

Native. Lowland, up to 1500 ft. Shaded places. Rare. P. June-July.

First record: the author, 1881, as *Luzula vernalis* DC.

Glen Docharty. Dundonnell.

719/4. J. MULTIFLORUM Druce.

Native. Heathy and peaty places. Common, ascending to 3000 ft. P. July-August.

First record: the author, 1881, as *Luzula erecta*.

Kyle of Loch Alsh, *Marshall*, 1910. Dundonnell. Applecross. Glen Shiel. Braemore. Sgurr Mhor. Beinn Fiadha.

Var. CONGESTUM (DC.) Druce. The commoner form.

Var. PALLESCENS (Hoppe) Druce. Braemore. Dundonnell.

719/6. J. CAMPESTRE Morong. *Field Wood Rush.*

Native. Heathy moors, drier pastures, etc., ascending to 2000 ft. Common and widely distributed. P. June-July.

First record: the author, 1881, as *Luzula campestris*.

719/7. J. ARCUATUM (Sw.) Dr.
Luzula arcuata Wahl.

Native. Alpine. Mountain screes, 2000-2500 ft. Very rare. P. July-August.

First record: ~~*J. H. Evans*, 1904~~. Mr Justice Talbot, 1922

! Mam Soul, *J. H. Evans*. The Slioch. *Mr Justice Talbot*, 1922.

This is probably the lowest altitude the plant descends to.

719/8. J. SPICATUM (L.) Dr.

Native. Alpine. Mountain cliffs and rock clefts, up to 3400 ft. Local. P. July-August.

First record: the author, 1881, as *Luzula spicata*.

The Slioch. Ben Eay. Ben More Coigach. An Teallach. Meall Gorm. Beinn Dearg. Sgurr Mhor. Beallach nam bo.

99. *TYPHACEAE.*

722. SPARGANIUM [Tourn.] L.

722/2. S. ERECTUM L. *Greater Bur Reed.*

Native. Lowland. Swampy pools. Rare. P. July-August.

First record: the author, 1881, as *S. ramosum*.

Dornie.

722/3. S. SIMPLEX Huds. *Simple Bur Reed.*

Native. Lowland. Lochs. Rare. P July-August.

First record: the author, 1881.
Loch Maree.

722/4. S. ANGUSTIFOLIUM Mich. *Floating Bur Reed.*
S. affine Schniz. *S. natans* Hook. ? of L.
Native. Mainly lowland but ascends to 2200 ft. on Slioch. Lochs. Local. P. July-August.
First certain record: the author, 1887, but it may have been the *S. natans* of *Lightfoot Fl. Scotica*, 1777, in "lochs between Little Loch Broom and Ledbeg."
Pool at Gairloch (!), 1896, *D. Russell*. Kyle of Alsh, *Marshall*, 1910. Lochabraon. Ben Eay. The Slioch, 2200 ft.
This has been put into many lochs in order to give food to trout, e.g. Loch Fhiona near Inverbroom.

722/5. S. MINIMUM Fries. *Floating Bur Reed.*
Native. Lowland. Lochs and pools. Local. P. July-August.
First record: the author, 1881.
Marsh near Loch Alsh. Loch Duich side, *Dixon*. Gairloch. Near the river Kerry.

[TYPHA LATIFOLIA is reported for E. Ross.]

101. *LEMNACEAE.*

727. LEMNA L.

727/1. L. MINOR L. *Duckweed.*
Native. Watery places and still pools. Rare. A. June-July.
First record: the author, 1881.
Kinlochewe.

[ALISMA PLANTAGO and ECHINODORUS are recorded for E. Ross.]

103. *NAIADACEAE.*

735. TRIGLOCHIN [Rivinus] L.

735/1. T. MARITIMUM L. *Arrowgrass.*
Native. Salt marshes. Local. P. July-August.
First record: the author, 1881.
Common on the shores of Loch Carron. Loch Broom. Inverewe. Aultbea. Attadale.

735/2. T. PALUSTRE L. *Marsh Arrowgrass.*
Native. Lowland, but ascending to 1500 ft. Wet places. Local. P. July-August.
First record: the author, 1881.
Kyle of Loch Alsh, *Marshall*, 1910. Glen Docharty. Ullapool. Melvaig. Little Sand. Mellon Charles.

737. POTAMOGETON [Tourn.] L.

737/1. P. NATANS L. *Pondweed.*
Native. Lowland. Lochs and pools. Local. P. July-August.
First record: *Dixon*, 1886.
Applecross, *Allan*. Gairloch, *Dixon*. Loch a Mhuilinn, 1893. Bad-a-Chro.

737/2. P. OBLONGUS Viv. *Pondweed.*
P. polygonifolius Pourr.
Native. Lowland, ascending to 1500 ft. Lochs, pools and wet spots on heaths and bogs. Common. P. July-August.
First record: the author, 1881.
Strathcarron. Kintail. Loch Alsh. Applecross. Gairloch. Poolewe. Dundonnell. Ullapool. Braemore. Achiltibuie, etc.
This may be the *natans* of the Applecross and Gairloch Lists.
Var. AMPHIBIUS (Fr.). The heath form is also common.

[P. ALPINUS is recorded for E. Ross.]

737/9. P. GRAMINEUS L.
P. heterophyllus Schreb.
Native. Lowland. Pools. Rare. P. July-August.
First found by the author, in 1893, in Loch a Mhuilinn with the form *terrestris*.

[737/11. P. NITENS Web. = P. GRAMINEUS × PERFOLIATUS. W. Ross, *Scot. Nat.*, 170, 1899, but the exact locality is lacking. It occurs in Sutherland and *P. alpinus*, *P. angustifolius* and *P. perfoliatus* in E. Ross. All should be searched for.]

[737/13. P. LUCENS L. *Shining-leaved Pondweed.*
Gairloch, *Dixon*, 1886. Needs confirmation. It occurs in Sutherland and Skye.]

738. RUPPIA L.

738/2. R. ROSTELLATA Koch.
Native. Saline pools near coast. Rare. P. July-August.
First record: the author, 1893.
Brackish ditches at head of Loch Carron. Aultbea.
Var. NANA Boswell-Syme. Loch Carron.

740. ZOSTERA L.

740/1. Z. MARINA L. *Grass Wrack.*
Native. Sea water. Local. P. July-August.
First record: the author, 1881.
Jeantown. Torridon. Gairloch. Loch Broom.
Var. ANGUSTIFOLIA Hornem. Loch Carron, *Rev. H. E. Fox.*

105. CYPERACEAE.

745. ELEOCHARIS R. Br.

745/1. E. PALUSTRIS Br.
Scirpus palustris L.
Native. Lowland. Loch margins. Locally common. P. July-August.
First found by the author, 1881 (omitted from List).
Applecross, *Allan*. 1886. Loch Clair. Strathcarron. Moorland between Ullapool and Dundonnell. Aultbea. Gairloch.

[E. UNIGLUMIS grows in Skye and Sutherland.]

745/3. E. MULTICAULIS Sm.
Native. Lowland. Marshy places. Common. P. July-August.
First record: the author, 1881.
Kinlochewe. Kintail. Applecross. Gairloch. Braemore. Coigach.

745/4. E. ACICULARIS Br.
Native. Lowland. Bottom of lochs. Very rare. P. July-August.
Loch Maree. 1881.

746. SCIRPUS [Tourn.] L.

746/2. S. MARITIMUS L.
Native. Maritime marshes. Local. P. July-August.
First record: *Gordon Coll. Fl. Moray*. 3, 1839.
Kintail, *Gordon*. Kishorn. Aultbea.
Var. CONGLOBATUS S. F. Gray. Kishorn. Kintail. Aultbea.

746/3. S. LACUSTRIS L. *Bulrush.*
Native. Lowland. Lochs. Local. P July-August.
First record: the author, 1881.
Glen Carron, *Sewell*. Applecross. Loch a Mhuilinn. Loch Coulin. Loch Duich. Loch Tallit. Loch Bad na Achlaise. Near Cnochan.

[S. TABERNAEMONTANI is reported from Sutherland and Skye.]

746/7. S. CAESPITOSUS L. *Deer's Grass.*
Native. Heathy moors. Abundant and generally distributed, ascending to over 3000 ft. This and *Juncus squarrosus* are a favourite food of deer.
First record: the author, 1881.

746/8. S. PAUCIFLORUS Lightf.
Native. Lowland. Wet bogs. Common. P. July-August.
First record: the author, 1881.
Bad-a-Chro. Kinlochewe. Loch Maree. Applecross. Gairloch. Ullapool. Aultbea.

746/11. S. SETACEUS L.
Native. Lowland. Wet sandy places. Local. P, July-August,
First record: the author, 1887,

Loch Maree, *Mr Justice Talbot*. Kinlochewe. Ullapool. Strathcarron. Applecross, in the limestone pavement. Laid.

[S. FILIFORMIS is recorded for Skye and [E. Ross.]

? err

746/13. S. FLUITANS L.

Native. Shallow lochs and slow streams. Local. P. July-August.

First record: the author, 1881.

Loch a Chroig, *J. A. Webb*. Loch Coulin. Small stream near Loch Carron. Kerrydale.

746/15. S. RUFUS (Huds.) Schrad.

Native. Salt marshes. Local. P. July-August.

First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843.

Applecross, two feet high, *Graham*. Inverlael, *Lady Fowler*. Loch Duich, *H. N. Dixon*. Loch Carron, 1893. Mellon Charles. Near Aultbea.

Var. BIFOLIUS (Wallr.). Loch Carron. Aultbea.

747. ERIOPHORUM L.

747/1. E. PANICULATUM (Lam.) Druce. *Broad-leaved Cotton-grass.*
E. latifolium Hoppe.

Native. Lowland. Bogs. Local. P. June-August.

First record: *Mr Stables* in *Gordon Coll. Fl. Moray*, 1839, as *E. pubescens*.

Plockton. Six miles W.S.W. of Strome Ferry, *Stables*. Achiltibuie, *V. Buxton*. Bad na Achlaise. Lochan na Coile. Gairloch.

747/2. E. ANGUSTIFOLIUM Roth. *Cotton-grass.*
E. polystachium L., p.p.

Native. Bogs. Common and generally distributed, ascending to over 3000 ft. P. June-August.

First record: the author, 1881.

Var. ALPINUS Gaud. = var. *minus* Koch. The Slioch.

Var. VAILLANTII (Poit. & Turp.). Kinlochewe.

747/4. E. VAGINATUM L. *Cotton-grass.*

Native. Lowland. Bogs. Abundant and generally distributed, ascending to nearly 3000 ft. P. June-August.

First record: the author, 1881.

748. RYNCHOSPORA Vahl.

748/2. R. ALBA Vahl.

Native. Lowland. Moors. Locally common. P. June-August.

First record: *Prof. Churchill Babington* in *Top. Bot.*, 1874.

Loch Maree, *Mr Justice Talbot*. Glen Torridon. Strathcarron. Dundonnell. Lochan na Coile. Am Feur Loch. Loch Broom, etc.

749. SCHOENUS L.

749/1. S. NIGRICANS L.

Native. Lowland. Wet ground. Locally common. P. July-August.

First record: *Prof. Graham* in *Tr. Bot. Soc. Ed.*, 1843.

Applecross. *Graham*. Cnochan, *Lady Fowler*. Especially abundant about the side of Loch Broom. Strathcarron. Loch Maree. Gairloch. Am Feur Loch, etc.

Var. NANUS Lange. Strathcarron.

750. MARISCUS [Haller] Zinnn.

750/1. M. MARISCUS (L.) Druce.

Cladium jamaicense Cr. *C. germanicum* Schrad. *C. Mariscus* Br.

Native. Lowland. Loch margins. Very rare. P. July-August.

First record: *J. H. Evans* in *Scot. Nat.*, 186, 1891.

Near Poolewe. *Evans*. Kerrydale, 1926.

753. CAREX [Dill.] L.

[753/2. C. RIPARIA Curt. recorded in *Scot. Nat.*, 36, 1900, needs confirmation. C. ACUTIFORMIS is reported for E. Ross.]

[753/4. C. VESICARIA is recorded for E. Ross. It is given, unlocalised, by Mr Arthur Bennett in *Top. Bot. Supp.*, page 101, on the authority of Mr Ewing.]

753/6. C. SAXATILIS L.

Native. Alpine bogs, ascending to 3500 ft. Rare. P. July-August.

First found by *Mr Sewell* in 1889.

Sgurr Ruadh, about 3000 ft., *Sewell*. Beinn Fiadha, *H. N. Dixon*. Beinn Dearg, in both E. and W. Ross, 1903.

753/7. C. ROSTRATA Stokes.

C. ampullacea Good.

Native. Lowland, ascending to 2500 ft. Wet bogs. Common and generally distributed. P. June-August.

First record: the author, 1881, as *C. ampullacea*.

Loch a Mhuilinn. Loch na Gairbhe. Strome Ferry, *W. R. Linton*, 1884.

Var. BRUNNESCENS (And.) Dr. Gruinard. A form with involute leaves on Ben Eay.

753/8. C. LASIOCARPA Ehrh.

C. filiformis auct.

Native. Lowland. Watery places in bogs, loch and pool margins. Rare. P. July-August.

First record: *P. Ewing* in *Scot. Nat.*, 1892.

Loch na Coile. Kerrydale, 1926.

753/9. C. HIRTA L. *Hairy Sedge.*

Native. Light soil near sea level. Rare. P. July.

First found near Flowerdale by the author. See *Rep. B.E.C.*, 1926.

753/11. C. SYLVATICA Huds. *Wood Sedge.*
Native. Lowland. Shaded places. Not rare. P. June-August.
First record: the author, 1881.
Strome. Braemore. Dundonnell. Loch Alsh. Applecross. Kishorn. Gruinard, etc.

[C. CAPILLARIS occurs in Sutherland and E. Ross.]

753/13. C. HELODES Link.
C. laevigata Sm.
Native. Lowland. Wet, rocky places. Rare. P. July-August.
First record: by Loch Maree, *D. Russell* in *Scot. Nat.*, 108, 1901.
Near A Ghairbhe, *Salmon*. Loch Dornie, *Lady Fowler*.

753/15. C. BINERVIS Sm.
Native. Lowland, but ascending to 3000 ft. Heathy ground and stream sides. Common. P. June-August.
First record: the author, 1881.
Glen Torridon (4 ft. high). Braemore. Isle of Longa. Applecross. Glen Shiel. Gairloch. Loch Maree.
Sometimes confused with *helodes*.
Var. NIGRESCENS Druce. Cnochan, 1894. The Slioch. Beinn Dearg. Sgurr Mhor. Sgurr Fhuaran.

753/17. C. DISTANS L.
Native. Lowland. Marshy places near coast. Rare. P. July-August.
First found by the author in 1904.
Gruinard.

753/19. C. FULVA Host.
Including *C. Hornschuchiana* Hoppe.
Native. Marshy places. Local. Rather common, ascending to 2500 ft. July-August.
First record: the author, 1881.
Strome Ferry, *W. R. Linton*. Kyle of Loch Alsh, *Marshall*. Glen Torridon. Strathcarron. Gairloch. Applecross. Glen Shiel. Loch Maree. The Slioch. An Teallach. Sgurr Mhor.

753/20. C. FLAVA L. *Yellow Sedge.*
Native. Lowland. Wet places, ascending to 2000 ft. Local. P. June-August.
First record: the author, 1881.
Kinlochewe. Applecross. Dundonnell. Gairloch. Kerrydale, etc.
The dark-glumed alpine form grew on Beinn Dearg.
Var. OEDOCARPA And. is the common form.
Var. OEDERI Lilj. = var. *minor* Towns.
Strathcarron. Applecross. Gairloch. Braemore.
× FULVA = C. XANTHOCARPA Dégl. Loch Clair, 1888. Dundonnell.

753/21. C. LEPIDOCARPA Tausch.
Native. Lowland. Wet places. Local. P. June-August.
First found by the author in 1881.
Strome Ferry, *E. F. Linton*, 1884. Loch Maree. Cnochan. Gairloch.

753/22. C. OEDERI Retz.
C. chrysites Link.
Native. Lowland. Loch margins. Rare. P. June-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Upper end of Loch Carron.

753/23. C. EXTENSA Good.
Native. Saline, grassy places near the sea. Rare. P. June-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Loch Carron. Jeantown. Gairloch. Aultbea.
Var. PUMILA And. Shores of Loch Carron.

753/32. C. PILULIFERA L. *Pill-headed Sedge.*
Native. Lowland, but ascending to 2500 ft. Heathy places. Common and generally distributed. P. June-August.
First record: the author, 1881.
Braemore. Dundonnell. Torridon. Gairloch, etc.
Var. LONGIBRACTEATA Lange. Slioch, *Salmon*. Ben Eay. An Teallach. Cnochan.

[C. CARYOPHYLLEA is recorded for Skye and Sutherland.]

753/33. C. DIVERSICOLOR Crantz.
C. glauca Scop. *C. flacca* Schreb.
Native. Lowland. Marshy places. Common and generally distributed and variable. P. June-August.
First record: the author, 1881, as *C. glauca*.
A robust form grows on the Cnochan rocks.

753/34. C. PALLESCENS L.
Native. Lowland. Shaded places. Local. P. June-August.
First record: the author, 1881.
Kinlochewe, *Salmon*. Loch Maree, *Mr Justice Talbot*. Base of Sgurr Fhuaran. Braemore. Dundonnell. Applecross. Duncraig. Rhidorroch. Inverlael. Greenyard. Cnochan.
Var. UNDULATA Kunze is the common form.

753/35. C. VAGINATA Tausch.
Native. Alpine. On wet, grassy slopes. Rare. P. July.
First record: the author in *Rep. Bot. Rec. Club*, 24, 1884.
The Slioch.

753/36. C. PANICEA L.
Native. Lowland, but ascending to 2000 ft. Wet places, bogs, etc. Common and generally distributed. P. June-August.

First record: the author, 1881.
The fruits are often infected with a fungus as at Loch Maree, etc.
Var. TUMIDULA Laest. Glen Carron, *Scot. Nat.*, 258, 1887.

[C. AQUATILIS is reported for Sutherland and Inverness.]

753/38. C. LIMOSA L.
Native. Lowland. In the wettest part of bogs. Local. P. July-August
First found by the author: see *Ann. Scot. Nat. Hist.*, 122, 1898.
Near Am Feur Loch. Bog near Kerrywood. Near Gairloch.

[C. MAGELLANICA is reported for Skye.]

753/49. C. GOODENOWII Gay.
C. vulgaris Fr.
Native. Lowland, ascending to 2500 ft. Wet ground, loch sides and bogs. Common and very variable. P. June-August.
First record: the author, 1881, as *C. vulgaris*.
Var. JUNCEA (Fr.) = JUNCELLA. Am Feur. Kinlochewe. Loch Achall. Loch Maree, etc.
Var. MELAENA Wimm. (a diseased form). An Teallach. Ben Eay.
Var. CHLOROSTACHYA Asch. Gairloch. Kinlochewe.
Var. RECTA A. & G. Dundonnell.

753/51. C. CONCOLOR R. Br.
C. rigida Good.
Native. Alpine. Summits of the higher hills, up to 3500 ft. Locally common. P. July-August.
First record: the author, 1881, as *C. rigida*.
The Slioch. Ben Eay. An Teallach. Sgurr Fhuaran. Beinn Fiadha. Beinn Dearg. Sgurr Mhor. Fannich, etc.
A luxuriant form grew at 3200 ft. on Beinn Dearg.

753/53. C. LEPORINA L.
C. ovalis Good.
Native. Lowland. Heathy places and coarse, grassy ground. Local. P. June-August.
First record: the author, 1881.
Kyle of Loch Alsh, *Marshall*, 1910. Glen Shiel. Braemore. Ullapool. Dundonnell. Applecross. Kishorn. Glen Docharty. Isle of Longa, etc.

753/56. C. STELLULATA Good.
C. echinata auct.
Native. Lowland, but ascending to 2500 ft. Wet, heathy places. Abundant. P. June-August.
First record: the author, 1881.

753/57. C. REMOTA L.
Native. Lowland. Heathy places. Local and rare. P. June-August.
First record: the author, 1881.
Loch Coulin side. Dundonnell.
Var. SUBLOLIACEA A. & G. = *C. tenella* Sm. non Schk. Loch Duich.

753/58. C. CANESCENS L.
C. curta Good.
Native. Lowland, but ascending to 3000 ft. Boggy places. Rare. P. July-August.
First record: the author, 1881.
Loch Alsh.
Var. ROBUSTIOR Anders. (*C. vitilis* Bab. non Fr.) Beinn Fiadha, *H. N. Dixon.*

[C. VULPINA is reported from Skye.]

753/63. C. PANICULATA L. *Tussock Sedge.*
Native. Boggy places. Very rare. P. July.
First found by the author, 1889.
Gleann Bianasdail.

[C. DIANDRA and C. DISTICHA are reported for Sutherland.]

753/67. C. ARENARIA L. *Sand Sedge*
Native. Maritime sands. Locally common. P. June-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893.
Polglass. Isle of Longa. Gairloch. Greenyard. Little Sand. Big Sand. Mellon Charles.
Var. REMOTA Marsson. Isle of Longa.

753/71. C. RUPESTRIS Bell.
Native. Subalpine. Limestone rocks. Very local. P. June-August.
First found by the author, 1881.
Mam Ratachan (possibly this). In small quantity on the Cnochan rocks at a low altitude.

753/72. C. PAUCIFLORA Lightf.
Native. Lowland, ascending to near 2000 ft. Wet bogs. Locally abundant.
First record: the author, 1881.
Lower slopes of Ben Eay. Moorland in Glen Torridon. Moorland between Little and the Greater Loch Droma. Beinn Liath Beag. Meall a Chairn.

753/74. C. PULICARIS L. *Flea Sedge.*
Native. Ascends to over 3000 ft. Heaths, grassy places, rock ledges, preferring peaty soils. Common and generally distributed. P June-August.

First record: the author, 1881.
Var. MONTANA (Pugsl.). Cnochan rocks.

753/75. C. DIOICA L.
✓ Native. Ascends to 2000 ft. Wet places. Not uncommon and widely distributed. P. June-August.
First record: the author, 1881.
Loch Broom. Cnochan. Bad a Chroa. Glen Docharty. Very tall specimens near Kerrywood.

106. *GRAMINACEAE.*

765. PHALARIS L.

765/11. P. ARUNDINACEA L.
Native. Lowland. Stream sides. Local. P. June-August.
First record: the author, 1881.
Dornie. Applecross. Gairloch. Loch Broom.
Var. PICTA L. Strath.

766. ANTHOXANTHUM L.

766/1. A. ODORATUM L. *Sweet Scented Vernal Grass.*
Native. Grassy places. Common and generally distributed, ascending to over 3000 ft. on the mountains. P. May-June.
First record: the author, 1881.

770. ALOPECURUS L.

770/1. A. PRATENSIS L. *Meadow Fox-tail.*
Native. Lowland. Pastures and cultivated ground. Not rare. P. June-August.
First record: the author, 1881.
A very robust form occurred in cultivated fields at Strathcarron. Gairloch.

770/5. A. GENICULATUS L.
Native. Lowland. Wet places, ditches, ponds, and loch sides. Local. P. June-August.
First record: the author, 1881.
Kinlochewe. Ullapool. Applecross. Gairloch, etc.

[A. ALPINUS is reported for Ben Wyvis.]

777. PHLEUM L.

777/1. P. PRATENSE L. *Timothy Grass.*
Native. Lowland. Cultivated ground, in many cases doubtless introduced. Local. P. June-August.
First record: the author, 1881.
Kinlochewe. Large form at Jeantown. Dundonnell. Ullapool.
Var. INTERMEDIUM (Jord.). Ullapool.

[P. ALPINUM occurs in Inverness.]

[777/4. P. ARENARIUM L.
Native. Maritime sands. A. July.
First record: *C. Bailey* in *Rep. Bot. Rec. Club*, 1886.
Confirmation desirable.]

780. AGROSTIS L.

780/2. A. ALBA L. *Fiorin Grass.*
Native. Lowland. Heathy and grassy ground. Abundant and variable. P. June-August.
First record: the author, 1881.
Var. CONDENSATA Hack. (*coarctata* Hack.) Isle of Longa. Kinlochewe. Strathcarron. Ullapool. Torridon. Gairloch.
Var. MARITIMA Meyer. Jeantown. Polglass. Big Sand.
Var. PATULA Gaud. Ullapool.

780/3. A. CAPILLARIS L.
A. tenuis Sibth. *A. vulgaris* With.
Native. Lowland. ascending to 3000 ft. Heathy ground and dry places. Common and generally distributed. P. June-August.
First record: the author, 1881, as *A. vulgaris*.
Braemore. Ullapool. Applecross. Gairloch, etc.
Var. PUMILA (L.) Druce. An Teallach. Meall Gorm. Glen Docharty.

780/6. A. CANINA L.
Native. A common species on the moorlands, ascending to 3000 ft. P. June-August.
First record: the author, 1887.
About Kyle of Loch Alsh and Duirinish, *Marshall*, 1910. Glen Torridon. Glen Shiel. Gairloch. Dundonnell. Coigach.
Var. SCOTICA Hackel. Ben Eay. The Slioch, 1500 to 3000 ft., with subvar. *mutica* Hackel.
A. scotica was named from the plants gathered in the above localities by me in 1881. At first it was hoped they might be a form of *A. rubra* Wahl. See *Journ. Bot.*, 45, 1890.
Forma *grandiflora* Hack. Glen Torridon.

[MILIUM EFFUSUM is recorded for Easterness.]

787. AMMOPHILA Host.

787/1. A. ARENARIA Link.
Native. Sea sands. P. July-August.
Recorded by *Dr Trail* in *Scot. Nat.*, 106. 1900, without locality. It needs confirmation but is likely to occur.

789. AIRA L.

789/1. A. CARYOPHYLLEA L.
Native. Dry places and sandy ground. Rare. A. June-July.
First record: *P. Ewing*, 1887.

Loch Maree, *Mr Justice Talbot.* Strathcarron. Ullapool. Gairloch. Little Sand.

789/2. A. PRAECOX L.
Native. Heathy places on barish ground. Local. A. June.
First record: the author, 1881.
Strome Ferry, *E. F. Linton*, 1886. Ullapool. Keppoch. Braemore. Kinlochewe. Glen Docharty. Gairloch, etc.

791. DESCHAMPSIA Beauv.

791/1. D. CAESPITOSA Beauv.
Native. Heathy and grassy places and mountain slopes. Abundant and generally distributed from the coast level to the tops of the higher mountains. P. July-August.
First record: the author, 1881.
Var. BREVIFOLIA (Parn.) Dr. Slioch, *D. Russell.* An Teallach. Beinn Dearg.
Var. ALPINA (Gaud.). An Teallach. Meall Gorm. Beinn Dearg.
Var. ARGENTEA S. F. Gray. (*pallida* Koch). Applecross. Strathcarron. Kinlochewe.

791/2. D. ALPINA Beauv.
Native. High alpine slopes. Rare. P. July-August.
First found by the author in 1903.
Beinn Dearg, 3000 ft.

[D. SETACEA (ULIGINOSA) occurs in Skye, East Ross, and Sutherland.]

791/4. D. FLEXUOSA Trin.
Native. Lowland. Heathy places. Common. P. June-August.
First record: the author, 1881.
Var. MONTANA (Huds.) Hook. f., ascending to 3300 ft. An Teallach. Meall Gorm. Ben Eay. Beinn Dearg. Sgurr Mhor. Fannich. Keppoch.

792. HOLCUS L.

792/1. H. MOLLIS L. *Creeping Soft Grass.*
Native. Heathy ground. Local. P. June-August.
First record: the author, 1881.
Strome. Ullapool. Jeantown. Loch Maree side.

792/2. H. LANATUS L. *Yorkshire Fog.*
Native. Dry pastures and heathy ground, ascending to over 2000 ft. on The Slioch. Common and generally distributed. P. June-August.
First record: the author, 1881.

[TRISETUM FLAVESCENS occurs in Sutherland.]

794. AVENA L.

*794/1. A. FATUA L. *Wild Oat.*
Colonist. Cornfields. Rare. A. July.

First record: the author, 1881.
Strome.

794/2. A. PUBESCENS Huds.
Native. Rocky places. Local. P. July-August.
First record: *Prof. Churchill Babington* in *Top. Bot.*, 1874.
On the limestone at Ullapool. Melvaig. Little Sand. Mellon Charles. Loch Maree.
Var. GLABERRIMA Borb. Ullapool. Cnochan.
Var. ALPINA Gaud. Near Ullapool. Cnochan.

[A. PRATENSIS occurs in East Ross.]

*794/6. A. STRIGOSA Schreb. *Oat.*
Alien. A relic of cultivation. About crofts. Local. A. July.
First record: the author in *Rep. B.E.C.*, 141, 1926.
Ullapool. Mellon Charles. Gairloch.

*794/7. A. SATIVA L. *Oat.*
Alien. Casual on the shingle at Ullapool, 1926.

795. ARRHENATHERUM Beauv.

795/1. A. ELATIUS Mert. & Koch. *False Oat.*
A. avenaceum Beauv.
Native. Lowland. Waysides and waste places, ascending to 910 ft. Local. P. July.
First record: the author, 1881, as *A. avenaceum.*
Attadale. Strome. Ullapool.
Forma UMBROSA Druce and f. PAUCIFLORA Baenitz occur at Inverbroom.

795/2. A. TUBEROSUM (Gilib.) Druce.
Native. Lowland. Waysides and cultivated ground. Locally common. P. July-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Ullapool. Little Sand.

800. SIEGLINGIA Bern.

800/1. S. DECUMBENS Bernh.
Triodia decumbens Beauv.
Native. Heathy ground, especially on stiffer, damper soils and grassy mountain slopes. Locally common. P. July.
First record: the author, 1881.
Craigmore. Braemore. Glen Docharty. Dundonnell.

802. PHRAGMITES Adans.

802/1. P. PHRAGMITES (L.). *Reed.*
Arundo Phragmites L. *P. communis* Trin. *P. vulgaris* Dr.
Native. Loch borders. Locally abundant. P. July-August.
First record: the author, 1881.

Loch Duich. Glen Torridon. Gairloch. Little Sand. Aultbea. Melvaig, etc.

804. SESLERIA Scop.

804/1. S. CAERULEA Ard.

Native. Rough, grassy places on limestone. Very rare. P. July.

First record: *Lightfoot Fl. Scotica*, 1777, as *Cynosurus caeruleus.*

On wet places on the sides of mountains about Little Loch Broom, *Lightfoot.* I have vainly searched for it.

808. CYNOSURUS L.

808/2. C. CRISTATUS L. *Crested Dog's-tail.*

Native. Lowland. Grassy places. Local. P. June-August.

First record: the author, 1881.

Kinlochewe. Ullapool. Dundonnell. Jeantown. Gairloch. Melvaig. Little Sand.

[KOELERIA GRACILIS occurs in E. Ross and Sutherland.]

[814/1. CATABROSA AQUATICA Beauv. is included for W. Ross in *Ann. Scot. Nat. Hist.*, 227. 1907, but I have no further details. It is likely to occur on the coast.]

813. MOLINIA Schrank.

813/1. M. CAERULEA Moench.

M. varia Schrank.

Native. Wet moors. Abundant and generally distributed, probably the commonest grass in the county, ascending to 2800 ft. P. July-October.

First record: the author, 1881, as *M. varia.*

Var. BREVIRAMOSA (Parn.) Dr. Isle Martin, *Lady Fowler.* Dundonnell. Glen Kerry.

Var. DEPAUPERATA (Lindl.). Strathcarron. Ben Eay. Sgurr Mhor.

818. MELICA L.

818/1. M. NUTANS L.

Native. Lowland. Rocky places. Rare. P. July.

First record: *W. R. Linton* in *Rep. Bot. Rec. Club*, 1886.

Strome, *W. R. Linton.* Limestone gorge at Ullapool. By the waterfall at Jeantown. Dundonnell. Rhidorroch.

[M. UNIFLORA is recorded for Sutherland.]

819. DACTYLIS L.

819/1. D. GLOMERATA L. *Cock's Tail.*

Native. Scattered through the lowland part of the county, especially on the richer and more manured soils. Local. P. June-August.

First record: the author, 1881.

Kinlochewe. Ullapool. Applecross. Jeantown. Gairloch. Aultbea.

[BRIZA MEDIA occurs in E. Ross.]

824. POA L.

824/2. P. PRATENSIS L. *Meadow Poa.*
Native. Lowland. Grassy places. Common and widely distributed, ascending to 2000 ft. P. June-August.
First record: the author, 1881.
Kinlochewe. Loch Maree. Gairloch. Poolewe. Ullapool. Braemore. Coigach, etc.

824/3. P. SUBCAERULEA Sm.
Native. Lowland. Sea coast and dry hills. Local. P. June-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
On beach at Ullapool. Strathcarron. Gairloch. Cnochan. Big Sand. Mellon Charles. Inverbroom.

824/4. P. IRRIGATA Lindm.
Native. On wet, rocky places. Local. P. June-August.
First found by the author in 1894, as *P. humilis.*
Cnochan rocks.
This species was added to the British Flora by the author, see *Scot. Nat.*, 37 and 137, 1895.

824/6. P. TRIVIALIS L. *Rough Meadow Poa.*
Native. Lowland. Waysides, grassy and wooded places. Common. P. July-August.
First record: the author, 1881.
Var. GLABRA Döll. Applecross. Ullapool.
Var. MULTIFLORA Reichb. Ullapool.

824/7. P. NEMORALIS L. *Wood Poa.*
Native. Lowland. Shady places or rocky banks. Rare. P. June-August.
First record: the author, 1881.
Near Strome. Plentiful on a bridge near Braemore.

824/8. P. BALFOURII Bab.
Native. Alpine. Mountain rocks. Rare. P. July.
First recorded by *Salmon* in *Journ. Bot.*, 1897.
The Slioch.

[P. GLAUCA is recorded for Sutherland and Inverness.]

[824/11. P. ALPINA L.
Native. Alpine rocks. Very rare. P. July-August.
Recorded by *J. A. Webb* in 1925, but the specimens from moor, Derry Dale, have not been seen by me, and it is not a probable locality for this high alpine grass. It is recorded for Inverness, Skye, and Sutherland.]

[P. COMPRESSA is recorded for E. Ross.]

824/14. P. ANNUA L. *Annual Poa.*
Native. Waste, grassy places, on mountain screes, about houses and on house roofs. Common. A. May-October.
First record: the author, 1881.
Var. VARIA Gaud. (*supina* Schrad.). The Slioch. An Teallach. Sgurr Mhor. Fannich.

825. GLYCERIA R. Br.

825/2. G. FLUITANS Br. *Flote Grass.*
Native. Lowland. Plashy places, ditches and pool borders. Local. P. June-August.
First record: the author, 1881.
Kyle of Loch Alsh, *Marshall*, 1910. Dornie. Ullapool. Loch Maree. Gruinard.
Var. TRITICEA M. T. Lange. Gairloch.

[G. PLICATA is recorded for Easterness, E. Ross, and Sutherland.]

825/5. G. MARITIMA Wahl.
Native. Salt marshes. Local and variable. P. June-August.
First record: *Lightfoot Fl. Scotica*, 1777, as *Poa maritima*.
Abundant by Loch Carron. Kishorn. Applecross. Shieldaig.

[G. DISTANS is recorded for E. Ross and Sutherland.]

826. FESTUCA [Tourn.] L.

826/2. F. GIGANTEA Vill.
Native. Lowland. Shady places, among rocks, etc. Rather rare. P. June-July.
First record: the author, 1881, as *Bromus giganteus* L.
Strome. Inverlael. Jeantown. Rhidorroch. Dundonnell. Loch Maree. Gairloch, etc.

826/3. F. ARUNDINACEA Schreb.
Native. Grassy places on stiff soil. Rare. P. July-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Near Courtfield House, Kishorn.

[F. RIGIDA is recorded for E. Ross.]

826/4. F. ELATIOR L. *Meadow Fescue.*
Native. Lowland. Grassy places. Rare. P. July-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Kishorn, on limestone.

826/5. F. SYLVATICA Vill.
Native. Lowland. In the gorges of waterfalls. Rare. P. July.

First record: the author in *Tr. Bot. Soc. Ed.*, 1894.
Waterfall at Jeantown. Shady gorge, Dundonnell.

826/7. F. RUBRA L. *Red Fescue.*
Native. Grassy places, rock ledges, sea cliffs, moors and mountains. Very common, exceedingly variable and generally distributed from the coast level to high levels. P. June-August.
First record: the author, 1881, as *duriuscula*.
Var. BARBATA (Hack.)=*dumetorum* Howarth. An Teallach. Beinn Alligin.
Var. PRUINOSA (Hack.). Loch Torridon.
Var. MEGASTACHYA Gaud. Duneraig.
Var. GLAUCESCENS Heg. & Heer. Gairloch. Ullapool. Docharty. Loch Maree.
Var. ARENARIA (Osb.). Little Sand.
A depauperate form grew near Abtruinn Bruachaig.

826/9. F. OVINA L. *Sheep's Fescue.*
Native. Grassy places, rocks, and wall tops. Common from coast level to mountain tops, at 3000 ft. P. June-August.
First record: the author, 1881.
Var. HISPIDULA Hack. Cnochan.
Var. VIVIPARA. Flowerdale. Loch Maree. Port Henderson.

826/10. F. SUPINA Schur. vivipara
Native. Mountains. On calcareous rocks. Rare. P. July.
First found by the author on the Cnochan rocks.
Var. VIVIPARA Richt. Cnochan rocks.

826/12. F. CAPILLATA Lam. [illegible] *Sheep's Fescue.*
F. paludosa Gaud.
Native. Peaty places, heaths and mountain slops. Common on the acidific soils and widely distributed. P. June-July.
First record: the author in *Tr. Bot. Soc. Ed.*, 123, 1894.
At Braemore it grew on a peat-topped wall with *Pedicularis sylvatica*, *Orchis maculata vera*, *Narthecium*, *Carex stellulata*, *C. pulicaria*, *Molinia* and *Blechnum Spicant*.

826/17. F. BROMOIDES L.
Native. Lowland. Dry, grassy places. Local. A. June-July.
First record: the author, 1881, as *F. sciuroides*.
Strathcarron. Ullapool. Loch Torridon side.

827. BROMUS [Dill.] L.

827/6. B. RAMOSUS Huds.
Native. Lowland. Shady places. Rare. P. July-August.
First record: the author in *Tr. Bot. Soc. Ed.*, 123, 1894.
Inverlael,

*827/16. B. SECALINUS L.
Colonist. Cultivated ground. Rare. A. July.
First record: the author, *l.c.*, 123, 1894.
Strathcarron. Ullapool. Dundonnell.

827/17. B. PRATENSIS Ehrh.
B. commutatus Schrad.
Native or Colonist. Cultivated ground. Rare. A. July
First record: the author, *l.c.*, 1894.
Ullapool. Gairloch. Greenyard.

827/18. B. RACEMOSUS L.
Native or Colonist. Lowland. Cultivated ground. Rare. A. July.
First record: the author, *l.c.*, 1894.
Ullapool.

827/19. B. HORDEACEUS L. *Soft Brome.*
B. mollis L.
Native. Cultivated ground, waysides and grassy fields. Not uncommon in the lowlands. A. June-July.
First record: the author, 1881, as *B. mollis.*
Melvaig. Strath. Ullapool.
Var. GLABRATUS (Döll) Druce. Ullapool.

[B. STERILIS is recorded for E. Ross.]

828. BRACHYPODIUM Beauv.

828/1. B. SYLVATICUM (Huds.) R. & S.
Native. Lowland. Shady places. Local. P. July.
First record: the author in *Tr. Bot. Soc. Ed.*, 1893, as *B. gracile* Beauv.
Applecross. Rhidorroch. Waterfall at Jeantown. Ullapool. Gairloch.

829. LOLIUM L.

829/1. L. PERENNE L. *Rye Grass.*
Native. Lowland. Grassy places. Not uncommon, but often sown. P. June-August.
First record: the author, 1881.
Strathcarron. Dornie. Ullapool. Kinlochewe. Loch Maree. Gairloch. Coigach.

*829/4. L. ITALICUM Braun. *Italian Rye Grass.*
Alien. A sown pasture grass. A. or B. June-July.
Kinlochewe. Gairloch.

830. AGROPYRON J. Gaertn.

830/1. A. JUNCEUM Beauv.
Native. On more or less mobile maritime sands. Rare. P. June-August.
First found by the author in 1893.

Polglass. Applecross.

×REPENS=A. HACKELII Druce. Near Laid but *A. junceum* was vainly sought for. This brittle putative parent may have been destroyed by the wind-blown sand, while the more rigid and stronger hybrid remained. In Zetland I noticed that *A. junceum* had been eradicated by the sand storms.

830/4. A. REPENS Beauv. *Twitch Grass.*

Native. Lowland. In waste places, by fields and waysides. Common and variable. P. June-August.

First record: the author, 1881.

Var. LEERSIANUM S. F. Gray. Ullapool. Melvaig.

Var. VAILLANTIANUM Schrank. (*barbatum* Duval Jouve). Strathcarron.

Var. MARITIMUM (Hack.) Druce. Jeantown. A rigid maritime form.

Var. CAESIUM Döll ? of Presl. Strathcarron. The true *caesium* has hairy sheaths.

830/6. A. CANINUM Beauv.

Native. Lowland. Shady places. Rare. P. July.

First record: the author, 1881.

Waterfall at Jeantown. Dundonnell. Rhidorroch.

834. NARDUS L.

834/1. N. STRICTA L. *Mat-grass.*

Native. Heathy ground, extending in great masses up the mountain slopes to over 3000 ft. Common and widely distributed. P. June-August.

First record: the author, 1881.

836. ELYMUS L.

836/1. E. ARENARIUS L. *Lime Grass.*

Native. Sea shingle. Locally common, and an increasing species. P. July-August.

First record: the author in *Tr. Bot. Soc. Ed.*, 1894.

Coigach. *V. Burton.* River shingle at Loch Broom, between Inverlael and Ullapool, and now common about Ullapool. Polglass. Mellon Charles. Laid. Poolewe.

107. *PINACEAE.*

839. JUNIPERUS [Tourn.] L.

839/1. J. COMMUNIS L. *Juniper.*

Native. Rocky slopes. Very rare. Shrub. May-June.

Recorded from Gairloch by *J. H. Dixon*, 1886, by *Mr Allan* from Applecross and by *Miss V. Burton* from Achiltibuie. These records may refer to *J. sibirica*.

839/2. J. SIBIRICA Burgs. *Dwarf Juniper.*

J. nana Willd.

Native. Mountain or rocky cliffs. Local. Shrub. May-June.

First record: the author, 1881.

The Slioch. Ben Eay. Ullapool. Meall a Chairn. Strathcarron. Beinn Dearg. Laid, near sea level. An intermediate with *J. communis* also occurs.

841. PINUS [Tourn.] L.

841/1. P. sylvestris L. *Scots Pine.*

Native. Lowland. Wooded places. Local. Tree. July.

Remains of ancient trees are to be seen in the peat bogs.

First record: *Lightfoot Fl. Scotica*, 1777.

Loch Maree, *Lightfoot*. This tree probably supplied the ancient ironworks which once existed there with fuel. Gairloch, *Russell*. Braemore. Dundonnell. Kerrydale, etc.

842. LARIX [Tourn.] Mill.

*842/1. L. Larix (L.) Karst. *Larch.*

Alien. Europe. An extensively planted tree, but seeding on the moors. The late Sir John Fowler introduced hundreds of thousands about Braemore, little realising the use to which they would be put or into whose hands they would fall.

Noticed by the author in 1881.

Many exotic specimens of Coniferae are planted at Flowerdale and elsewhere.

108. *EQUISETACEAE.*

844. EQUISETUM [Tourn.] L.

844/1. E. maximum Lam. *Greater Horse-tail.*

Native. Lowland. Shady or wet places. Local and rare. P. March-April.

First record: Applecross, *Allan* in *Tr. Bot. Soc. Ed.*, 1886.

Close to the window of the little inn at Applecross and plentiful in the woods close by.

844/2. E. arvense L. *Common Horse-tail.*

Native. Bare soils and cultivated ground. Local. April.

First record: the author, 1881.

Badanscally Bay, Coigach, *Lady Fowler*. Kinlochewe. Jeantown. Loch Maree. A curious form, perhaps a hybrid with *E. maximum*, grew at Applecross.

844/3. E. sylvaticum L. *Wood Horse-tail.*

Native. Lowland, ascending to 2000 ft. Boggy places. Widely distributed, but not very common. P. April.

First record: the author, 1881.

Loch Bannagayle. Coigach, *Lady Fowler*. Melvaig. Dundonnell. Kinlochewe. Kintail. Coigach. Ullapool. Port Henderson.

Var. capillare Hoffm. Kinlochewe. Dundonnell.

A form between *tenellum* Fries and the type on sandy margin of Loch Maree, *Salmon*.

[E. HYEMALE is given from E. Ross and Easterness.]

844/5. E. LIMOSUM L. *Smooth Horse-tail.*
Native. Lowland. Loch margins and slow streams. Locally common. P. June-July.
First record: the author, 1881.
Loch Coulin. Kishorn. Strathcarron. Drumroonie. Loch Maree. Gairloch, etc.

844/6. E. PALUSTRE L. *Marsh Horse-tail.*
Native. Lowland, ascending to 2000 ft. Wet soils, marshes, pools and loch borders. Locally common and variable. P. June-August.
First record: the author, 1881.
Loch Clair. Ullapool. Jeantown. Dundonnell. Little Sand.
Var. NUDUM Duby. Gairloch.

109. *POLYPODIACEAE.*

845. CRYPTOGRAMMA Br.

845/1. C. CRISPA Br. *Parsley Fern.*
Native. Mountain rocks, from 1600 to 2500 ft. Local. P. July-August.
First record: the author, 1881.
Slioch, *Salmon.* Sgurr Fhuaran. Beinn Fiadha. Meall Gorm. Sgurr na Caorach. Abundant on the Beallach nam bo. Beinn Dearg.

847. EUPTERIS Newm.

847/1. E. AQUILINA Newm. *Bracken.*
Pteridium aquilinum.
Native. Mainly lowland, ascending to 1700 ft. Locally abundant. P. July-August.
First record: the author, 1881, as *Pteris aquilina.*
Especially frequent about Dundonnell, and on the shores of Loch Maree. Our plant is the var. *lanuginosa* (Lam.) Druce.

849. BLECHNUM L.

849/1. B. SPICANT With. *Hard Fern.*
Lomaria Spicant.
Native. Wet, acid soils, ascending to 1500 ft. Common and widely distributed in heathy and wooded places on peat. P. July-August.
First record: the author, 1881.
Dundonnell. Braemore. Achiltibuie. Rhidorroch. Gairloch. Isle of Longa. Glen Shiel. Applecross, etc.

850. PHYLLITIS Hill.

850/1. P. SCOLOPENDRIUM (L.) Newm. *Hart's Tongue.*
Native. Lowland. Rocky, shady places. Rare. P. June-August.
First record: *J. H. Dixon*, Gairloch, 1886, as *Scolopendrium vulgare.*
Gairloch, *Dixon.* Kyle of Loch Alsh, *Marshall* and *Shoolbred.* Near Kishorn.

851. ASPLENIUM L.

851/1. A. MARINUM L. *Sea Spleenwort.*

Native. Sea cliffs and sea sands. Local. P. June-October.

First record: Gairloch, *J. H. Dixon*, 1886.

Gairloch, *Dixon*. Applecross, *Allan*. Loch Broom, *Lady Fowler*. Isle of Longa, *Cartwright* in *Hb. Ox.* Gairloch, *D. Russell*. Coigach. *V. Buxton*. Sea cave near Applecross.

851/2. A. TRICHOMANES L. *Black-veined Maiden Hair Spleenwort.*

Native. Lowland. Rocks. Common and widely distributed, especially near the sea. P. June-September.

First record: the author, 1881.

Kintail. Strome. Kyle of Loch Alsh. Applecross. Loch Maree side. Gairloch. Port Henderson. Poolewe. Dundonnell. Ullapool. Braemore. Coigach. Cnochan.

851/3. A. VIRIDE Huds. *Green Spleenwort.*

Native. Lowland. Rocks. chiefly limestone. Rare. P. June-September.

First record: *Lightfoot Fl. Scotica*, 1777.

Cnochan (!), *Lightfoot*. Ravine of Beinn Liath Mhor, *MacVicar*. Limestone gorge, Ullapool. Waterfall at Jeantown. Beinn Dearg.

851/5. A. ADIANTUM-NIGRUM L. *Black Spleenwort.*

Native. Lowland. Shaded, rocky places and walls. Common and widely distributed. P. June-October.

First record: the author, 1881.

Kyle of Loch Alsh, *Marshall*, 1910. Kintail. Strathcarron. Loch Maree. Gairloch. Dundonnell. Ullapool. Coigach, etc.

Var. OBTUSUM Kit. Gairloch, *D. Russell*.

851/7. A. RUTA-MURARIA L. *Wall-Rue.*

Native. Mainly lowland. Rocks. Common and widely distributed. P. June-October.

First record: the author, 1881.

Strathcarron. Kintail. Loch Alsh. Applecross. Torridon. Kinlochewe. Gairloch. Mellon Charles. Dundonnell. Ullapool. Braemore. Coigach.

Var. PSEUDOGERMANICUM Heuf. Limestone gorge at Ullapool. Cnochan. Poolewe.

851/9. A. SEPTENTRIONALE (L.) Hoffm. *Forked Spleenwort.*

Native. Mainly lowland. Rocks. Very rare. P. June-September.

First record: Gairloch, *J. H. Dixon*, 1886.

Gairloch, *Dixon*. Rock near Gruinard, *Lady Fowler*. Beinn Dearg.

853. ATHYRIUM Roth.

853/1. A. FILIX-FOEMINA Roth. *Lady Fern.*

Native. Moors, ravines, and shady places, ascending to 1500 ft. Abundant and widely distributed and variable. P. July-August.

First record: the author, 1881.
Very fine about Dundonnell. Braemore. Gairloch. Loch Maree.
Var. CONVEXUM Newm. Braemore. Achnashellach. Coigach, etc.
Var. MOLLE = *rhaeticum* (Sm.). Braemore. Dundonnell.

853/2. A. ALPESTRE Rylands. *Alpine Lady Fern.*
Native. Alpine. High mountain rocks and screes, descending to 2500 ft. Rare. P. July-August.
First found by the author. See *Ann. Scot. Nat. Hist.*, 174, 1903.
Beinn Dearg. Sgurr Mhor Fannich.

854. POLYSTICHUM Roth.

854/3. P. LOBATUM (Huds.). *Prickly Shield Fern.*
Native. Rocky places. Rare. P. July-September.
First record: the author, 1881, as *Aspidium lobatum*.
Achiltibuie, *V. Buxton*. Strathcarron, on both sides. Cnochan. Jeantown. Strome. Plockton.
Var. CAMBRICUM (S. F. Gray) = var. *Lonchitioides* Hook. Cnochan.

854/4. P. LONCHITIS Roth. *Holly Fern.*
Native. Alpine. Limestone rocks and on mountain cliffs, descending to 800 ft. at Cnochan. Local. P. July-August.
First record: *Lightfoot Fl. Scotica*, 1777, as *Polypodium Lonchitis*.
Cnochan (!), *Lightfoot*. Gairloch, *Dixon*. Sgurr Fhuaran. Beinn Dearg. Sgurr Mhor. Fannich. Ben Eay. Common and luxuriant on the Cnochan rocks.

856. DRYOPTERIS Adans.

856/1. D. FILIX-MAS Schott. *Male Fern.*
Lastrea. Nephrodium. Aspidium.
Native. Woods, heaths, and rocky screes. Ascending to over 2000 ft. Common and generally distributed. P. June-October.
First record: the author, 1881.
Very luxuriant at Dundonnell. Braemore. Loch Maree.
Var. PALEACEA (Don) Druce = *Borreri* Newm. Lienthgoch. Kinlochewe. Strome Ferry.
Var. AFFINIS (Newm.) Druce. Ullapool. Loch Maree. Gairloch.
Var. PUMILA (Moore). An Teallach.

856/3. D. AUSTRIACA Woynar.
Lastrea spinulosa Presl.
Native. Lowland. Moist, shady places. Local. P. June-September.
First record: the author, 1881.
Glen Shiel. Applecross. Kinlochewe. Braemore. Gairloch. Dundonnell.

856/4. D. ARISTATA Druce. *Broad Shield Fern.*
Lastrea dilata Presl. *Nephrodium dilatatum*.
Native. Shady places, on rock cliffs and screes. Ascending to 3300 ft. Common, widely distributed and variable. P. June-August.

First record: the author, 1881.

Strathcarron. Glen Shiel. Applecross. Loch Alsh. Torridon. Kinlochewe. Loch Maree. Gairloch. Dundonnell. Ullapool. Braemore. Coigach. Cnochan.

Var. ALPINA (Moore) Druce. Sgurr Fhuaran.

856/5. D. AEMULA Kuntze.

Native. Rocky places near the coast often in full exposure. Rare. P. June-August.

First record: the author, 1881.

Glen Docharty. Port Henderson. Isle of Longa.

856/7. D. OREOPTERIS Maxim. *Sweet Scented Mountain Fern.*
D. montana O. K. *Lastrea Oreopteris* Presl.

Native. Heathy ground. Ascending to 2800 ft. Common and widely distributed. P. June-September.

First record: the author, 1881.

856/9. D. PHEGOPTERIS (L.) Christ. *Beech Fern.*
Polypodium Polypodioides Fée.

Native. Shady places and rocky slopes. Ascending from nearly coast level to over 3000 ft. Local. P. June-September.

First record: the author, 1881.

Loch Maree, *Mr Justice Talbot*. Strome. Braemore. Ullapool. Cnochan, 1894. Gairloch. Dundonnell.

856/10. D. DRYOPTERIS (L.) Druce. *Oak Fern.*

Native. Wooded and heathy places and among talus. Ascending to over 2000 ft. Local. P. July-August.

First record: the author, 1881, as *Polypodium Dryopteris*.

Craig Tolia, *D. Russell* in *Scot. Nat.*, 108, 1901. Loch Maree, *Mr Justice Talbot*. Loch Carron. Loch Clair side. Jeantown. Cnochan, not typical, 1894. Dundonnell. Flowerdale.

857. CYSTOPTERIS Bernh.

857/3. C. FILIX-FRAGILIS Bernh. *Brittle Bladder Fern.*

Native. Shaded places on rocks, etc., ascending to 3000 ft. Locally common. P. July-August.

First record: the author, 1881.

Strathcarron. Kintail. Applecross. Glen Shiel. Loch Alsh. Kinlochewe. Gairloch. Poolewe. Braemore. Coigach.

Var. DENTATA (Hook.). Cnochan. Dundonnell.

[C. MONTANA is recorded for Skye.]

858. POLYPODIUM [Tourn.] L.

858/1. P. VULGARE L. *Common Polypody.*

Native. Lowland, but ascending to over 3000 ft. Rocky places and tree trunks. Common. P. June-October.

First record: the author, 1881.
Glen Shiel. Applecross. Gairloch. Strome. Kinlochewe. Braemore. Ullapool, etc.
Var. BREVIPES Milde. Cnochan. Gairloch.

110. *HYMENOPHYLLACEAE.*

863. HYMENOPHYLLUM Smith.

863/2. H. PELTATUM Desv. *Filmy Fern.*
H. unilaterale Bory. *H. Wilsoni* Hook.
Native. On tree trunks, etc., in shady places. Local. P. June-October.
First record: *Lightfoot Fl. Scotica*, 1777, as *Trichomanes tunbrigense.*
Gairloch, *Dixon.* Near Loch Maree, *Lightfoot.* A Ghairbhe, below Beinn a Mhuilidh. Abundant on rocks at Talladale, *Salmon.* Loch Broom, *Lady Fowler.* Strome Ferry.

111. *OSMUNDACEAE.*

864. OSMUNDA [Tourn.] L.

864/1. O. REGALIS L. *Royal Fern.*
Native. Lowland, a decreasing species. Rocky ravines. P. June-October.
First record: the author, 1881.
Achiltibuie, *F. Buxton.* Duncraig. Dundonnell. Near Applecross. On one of the islands of Loch Maree. Near Gairloch. Near Poolewe. Near Loch Bad a Chroa.

112. *OPHIOGLOSSACEAE.*

865. BOTRYCHIUM Sw.

865/1. B. LUNARIA Sw. *Moonwort.*
Native. Lowland, but ascending to 2000 ft. Grassy places. Rare. P. June-August.
First record: *Lightfoot Fl. Scotica*, 1777, as *Osmunda Lunaria.*
Dundonnell, *Lightfoot.* Loch Broom, *Lady Fowler.* Ullapool. South end of Loch Duich. Laid.

866. OPHIOGLOSSUM [Tourn.] L.

866/1. O. VULGATUM L. *Adder's-tongue.*
Native. Lowland. Grassy ground. Very rare. P. July-August.
First record: Gairloch, *J. H. Dixon*, 1881.
Gairloch, *Dixon.* Achiltibuie, *F. Buxton.* Not seen by me in the vice-county.

115. *ISOETACEAE.*

869. ISOETES L.

869/1. I. LACUSTRIS L. *Quill-wort.*
Native. Gregarious. In the lochs, usually lowland, ascending to 2000 ft. Local. P. May-July.

First record: the author, 1881.

Var. FALCATA Tausch. Beallach nam bo, 2000 ft. Loch Maree. Loch on The Slioch. Loch Clair.

869/2. I. ECHINOSPORA Durieu. *Quill-wort.*

Native. At the bottom of lochs, usually on peaty soils. Local. P. May-July.

First record: *P. Ewing* in *Scot. Nat.*, 1892.

Loch an Feith an Leothaid. Loch Gleann na muic, *Salmon*.

[PILULARIA is recorded for Sutherland.]

116. *LYCOPODIACEAE.*

870. LYCOPODIUM [Dill.] L.

870/1. L. ALPINUM L. *Alpine Club Moss.*

Native. Alpine, descending to 1000 ft. Grassy, heathy and stony places. Rather common. P. July-August.

First record: *Prof. Graham* in *Phyt.*, 1844.

Near Loch Maree, *Graham*. Fannich, *Lady Margaret Watney*. Coigach, F. *Buxton*. Beinn Fiadha. Sgurr Fhuaran. Beallach nam bo. Ben Eay. Beinn Alligin. An Teallach. Beinn Dearg. Cnochan, 1000 ft.

Var. DECIPIENS Syme. Ben Eay. Slioch. An Teallach.

[L. COMPLANATUM var. ANCEPS grows in Inverness.]

870/4. L. ANNOTINUM L. *Interrupted Club Moss.*

Native. Alpine. Trailing along heathy and stony ground on the shoulders of the higher hills. Rare. P. July-August.

First record: Stony and heathy places, *G. C. Smith* in *Phyt.* i., 147, 1842, and *Prof. Graham, l.c.*, 1844.

Near Loch Maree. *Graham*. Fannich, *Lady Margaret Watney*. Beinn Liath Beag. An Teallach. Near Loch Droma.

870/5. L. CLAVATUM L. *Staghorn Moss.*

Native. Heathy places and exposed shoulders of mountains. Not very common. P. July-August.

First record: *Prof. Graham, l.c.*, 1844.

Near Loch Maree. Graham. Fannich. *Lady Margaret Watney*. Carnasong. Ben Eay.

870/6. L. INUNDATUM L.

Native. Lowland. Wet places. Rare. P. June-August.

First record: *Prof. Graham, l.c.*, 1844.

Loch Maree, *Graham*. Near Loch Macreannach. Near Kinlochewe, *Salmon*. Meall Riabach, *Russell*.

870/7. L. SELAGO L.

Native. Alpine, descending to 82 ft. On grassy ground and among stones on mountains. Not uncommon but local. P. July-August.

First record: *Prof. Graham, l.c.*, 1844.

Achiltibuie, *U. Buxton*. Fannich, *Lady Margaret Watney*. Loch Maree, *Graham*. Ben Eay. Beinn Dearg. Sgurr Mhor. An Teallach. Slioch, etc.

Var. RECURVUM Desv. Slioch.

Var. APPRESSUM Desv. Strathcarron. An Teallach. At 82 ft., by Lochan na Caoile.

117. *SELAGINELLACEAE.*

871. SELAGINELLA Beauv.

871/1. S. SELAGINOIDES Link.

S. spinosa Beauv.

Native. Marshy ground, especially on calcareous soils, ascending to 3000 ft. Local. P. July-August.

First record: *Prof. Graham, l.c.*, 1844.

Near Loch Maree, *Graham*. Glen Shiel. Torridon. Strathcarron. Beallach nam bo. An Teallach. Cnochan. Gairloch. Glen Docharty.

118. *CHARACEAE.*

872. NITELLA Agardh.

872/2. N. OPACA Agardh.

Native. Usually lowland. In lochs and pools. Local. P. May-July.

First record: the author, 1881.

Loch Maree. Gairloch.

[N. FLEXILIS and N. TRANSLUCENS grow in Sutherland.]

876. CHARA [Vaill.] L.

'876/3. C. VULGARIS L.

Native. Lowland. In lochs, pools and ditches. Local. June-August.

First record: the author, 1925.

Loch Maree.

876/12. C. ASPERA Willd.

Native. In lochs, still streams and pools. Rare. July.

First record: *Allan* in *Tr. Bot. Soc Ed.*, 1886.

Needs confirmation.

876/16. C. FRAGILIS Desv.

Native. Lowland. In lochs, pools and ditches. Rare. June-August.

First record: *C. Bailey* in *Rep. Bot. Rec. Club*, 1883.

Ditch above Auchtercairn, Gairloch, *Bailey*. Strathcarron, *Bailey*. Loch a Mhuilinn. Loch Achall.

876/17. C. DELICATULA Agardh.

Native. Pools and streams. Rare. June-August.

First record: the author, 1913.

Strathcarron. Loch Maree. Applecross.

[C. HISPIDA is recorded for Sutherland and Caithness.]

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OF THE

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CONVENIENTLY ABBREVIATED REP. B.E.C.)

BY THE

EDITOR AND DISTRIBUTOR,
W. B. TURRILL, Esq., D.Sc. (Lond.), F.L.S.

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AUGUST 1929.

REPORT OF THE DISTRIBUTOR FOR 1928.

THE specimens received slightly exceed in number those listed in last year's Report: 31 contributors sending in 4804 sheets. With only two or three exceptions the specimens were well prepared and the task of distribution was lightened by the courtesy of the members in following the rules. The only complaint one can make is that the writing of several members is at times difficult or impossible to decipher. It is possible that some errors have escaped correction in this Report for that reason. Especially interesting series of foreign plants were received from Dr K. Rechinger and Prof. Beattie.

For reasons connected with his professional status, this year's distributor is not one of the active members of the exchange side of the Society's work. Perhaps, therefore, his colleagues in the Society and Club will not take it amiss if he makes a few suggestions beyond the scope normally allotted to a distributor.

The British flora is not a large one on the basis of species numbers. No competent systematist familiar with its problems supposes, however, that its taxonomic interest is yet exhausted. A great deal has been done towards increasing our knowledge of its species, their variations, and their distributions, within the past few decades, especially by the members of our Society. Yet a kindly critic cannot help feeling that the methods now in vogue need, not replacing, but correlating with others, in part, of more recent origin.

Many of the problems of plant-life, while primarily taxonomic, cannot be solved by herbarium and library studies alone, or by these correlated only with observational field-studies. Herbarium studies and field-collecting are indispensable, but they are insufficient by themselves. The cultural, ecological, genetical, anatomical, and cytological aspects have all an important bearing on taxonomic problems. How many species and varieties of uncertain status are there that have never been subjected to experimental research? How many hybrids are there recorded in our floras and lists that have never been subjected to genetical analysis? The answers to these questions are numbers of three or four places of figures. It is true that many members are limited by lack of sufficient time, space, and funds from conducting experiments on a large scale. On the other hand, if every member would attempt to solve one problem by attacking it from as many standpoints as possible —and especially by means of experiments—it does seem probable that future accounts of the British flora would be more stable, more complete, and more accurate than they have been till now. Surely the definite solution of one biological problem is worth many "county records," and every reader of this Report must have at least one such to attract him in his own vice-county.

One matter worthy of attention by the active exchange contributors is that the results of experiments and observations can often be recorded in a most excellent manner by means of annotated herbarium specimens. This applies to both ecological and genetical experiments and observations, using these terms in a broad sense. This matter is dealt with more fully in a paper to be published in the *Journal of Ecology*, and it is intended to have separates available for members particularly interested.

At Kew special biological and genetical herbaria for British plants have been established and the Director will gladly receive specimens for incorporation in them. Such specimens will always be available for reference and will form a permanent national record of the senders' researches.

The best thanks of the Club and of the Distributor are due to the Director of the Royal Botanic Gardens, Kew, and to the Keeper of the Herbarium and Library for giving facilities and providing technical assistance for this year's distribution.

W. B. TURRILL.

KEW, March 1929.

LIST OF PARCELS RECEIVED.

	No. of Specimens.
F. S. Beattie,	329
W. Biddiscombe,	56
C. E. Britton,	232
G. C. Brown,	86
R. Bulley,	112
R. J. Burdon,	127
G. C. Druce,	648
J. Fraser,	98
L. B. Hall,	32
P. M. Hall,	179
I. Helsby,	51
H. H. Johnston,	55
J. E. Little,	230
J. W. Long,	81
Louis Arsène,	469
J. E. Lousley,	225
C. V. B. Marquand,	36
R. Melville,	48
K. Rechinger,	351
H. J. Riddelsdell,	236
F. Rilstone,	100
Miss I. M. Roper,	169
C. E. Salmon,	22
W. A. Sledge,	82
R. L. Smith,	87
C. Waterfall,	314
Welsh National Museum, Department of Botany,	56
J. W. White,	169
J. A. Williams,	13
A. Wilson,	53
A. H. Wolley-Dod,	56
	4804

Thalictrum dunense Dum. [Ref. No. Z.26.] Sand dunes, Knocke-sur-mer, Belgium, July 13, 1928.—J. E. Lousley. "Did Mr Lousley notice whether the rootstock was caespitose or creeping? It has been urged that Syme's var. *maritimum* is a different plant from that of Dumortier."—Druce.

Ranunculus acris L. Example of fasciation. Meadows, Homebridge, Chester. Found by County School girl, about May 1916. Comm. C. Waterfall.

Ranunculus auricomus L. Newton Longville, Bucks, May 1928.—G. C. Druce. "The radical leaves of these specimens are very peculiar. They are reniform, rather deeply trifid and irregularly dentate. Only three leaves of my five plants show an approach to this, the rest of the radical leaves being tripartite, with each segment cuneate, bi-tri-fid and dentate. It would be interesting to know if the Bucks specimens are constant and worth a varietal name."—Fraser. "Is not this var. *reniformis* Kitt., the usual representative of the species at least in southern England?"—Britton.

Ranunculus Flammula L. [Ref. No. 3429.] Epsom Common, Surrey, September 1, 1928. This is the hairy form, with the hairs on the stems and on the leaves mostly appressed, though on some of the younger branches the hairs are more or less spreading. Most authors describe the species as glabrous or pubescent, but only Beck, as far as I know, gives a definite varietal name to a hairy form (var. *pilifer* Fl. N.O. i., 416 (1890)). As that is described as being decidedly hispid, it can hardly be the same as our British plant.—C. E. Britton. "I should call this var. *serratus* DC., *i.e.*, the serrate-leaved form of the ordinary plant, which is var. *suberectus* Syme."—Drabble. "Is this a habitat-form? Similar plants with wiry, much-branched stems and narrow leaves occur on the clay beds of small dried-up pools, but the most extreme forms are found on boggy ground, where shortage of water can hardly be the cause, unless indeed the poisonous nature of the peat forces the plant into a xerophytic habit."—Rilstone. "Not at all my idea of var. *serratus* Pers."—Druce.

Ranunculus pseudo-fluitans Baker & Foggitt. Wollaton Canal, Nottingham, July 1928.—R. Bulley. "Not large enough for the type form of this species, but may possibly be the var. *minor*. My sheet shows only the upper part of one stem and is without fruits. Under such conditions stable determination is impossible."—Pearsall.

Ranunculus Lenormandi Schultz. In peaty soil, Bovey Heath, South Devon, July 2, 1928.—C. Waterfall. "Yes."—Pearsall.

Capnoides claviculata (L.) Dr. Near Trerddol, Cardigan, on slate, August 22, 1928.—R. Melville.

Fumaria Bastardi Bor. = *F. confusa* Jord. Edge of wheat field, near Bovey Tracey, South Devon, July 6, 1928.—C. WATERFALL.

Fumaria ——. Barningham, Norfolk, June 28, 1928.—R. J. BURDON.

Barbarea intermedia Bor. Railway Banks, Cinderhill, Nottingham, May 3, 1928.—R. BULLEY.

Cardamine amara L. Woods on border of the Lake, Lymm, Cheshire, May 9, 1928.—C. WATERFALL.

Cardamine bulbifera Cr. Near Croxley Green, Herts, April 26, 1928. —I. HELSBY.

Erucastrum Pollichii Schimp. & Sp. [Ref. No. 3447.] Merton, Surrey, September 8, 1928. In the *British Plant List*, ed. 2, this species appears under the unfamiliar name of *Brassica gallica* (Willd.) Dr. If *Erucastrum* is not kept up, this species would seem more naturally associated with *Diplotaxis* rather than being placed under *Brassica*.—C. E. BRITTON. " If retained in this genus the valid trivial is *gallicum* (Willd.), who established *Sisymbrium gallicum*. If merged into *Brassica*, as is done in the *Gen. Plant.*, it should stand as *B. gallica* (Willd.) Dr."—DRUCE.

Coronopus didymus Sm. Edge of woodland path opposite Bovey Potteries, South Devon, July 2, 1928.—C. WATERFALL.

Lepidium graminifolium L. Cardiff Docks, Glamorgan, September 1928. This plant appears year after year at our local Docks in ever increasing numbers. There is only one patch of it, but it is not likely to be eradicated, as the ground will probably never be built over.—R. L. SMITH.

Raphanus maritimus Sm., var. *albus* Dr. Maritime sands, growing with the type, but less common, St Helier's, Jersey, July 1, 1928.—L. ARSENE.

Raphanus maritimus Sm. Maritime sands, St Helier's, Jersey, July 1, 1928.—L. ARSENE.

Viola Riviniana Reichb. [Ref. No. 31.] Peak Copse, Upham, S. Hants, May 10, 1925. A gathering to illustrate the woodland form of this species, which appears to be " type " or as close to it as it is possible to get. Possibly rather larger than usual, due to growing in deep leaf mould in open wood. The specimens of this gathering were of a pale bluish grey colour and the flowers the typical slatey blue of *Riviniana*.—P. M. HALL. " The method of perennation is peculiar. One of my specimens seems to have lost its crown, and an adventitious head has arisen from the root, giving rise to a new plant. The other has a long root, and a long stem has arisen from a point that seems adventitious, producing a long underground stem, with bracts, apparently to carry up the crown from a substratum of moss or decayed leaves. My own specimens have a caudex above the long roots."—FRASER.

Viola Riviniana Reichb. [Ref. No. 36.] Peak Copse, Upham, S. Hants, May 10, 1925. Var. *incisa* (Martr.-Don.) = forma *nemorosa* Neum. [Ref. No. 36A.] Peak Copse, Upham, S. Hants, May 10, 1925. This is a series to show the root system of *V. Riviniana* Reichb., and consists partly of the type *Riviniana* and partly of its var. *incisa*, gathering No. 36 being really part of the gathering No. 31, and No. 36A part of No. 33. The root system consists of a network of stout main roots lying in a horizontal plane parallel to the surface of the ground. The smaller fibrous rootlets branch off from these main roots, which at intervals form nodes from which soboles shoot up to the surface. Sometimes several soboles proceed from the same node. This method of perennation is not confined to woodland forms of *Riviniana* growing in leaf mould, which lends itself to penetration by horizontal roots, as I have found the same thing in var. *diversa* Greg. and also in the hybrid between *diversa* and *V. canina* L., growing in peaty turf. My attention was called to this character of *V. Riviniana* by Mr A. J. Wilmott.—P. M. HALL.

Viola Riviniana Reichb., var. *diversa* Greg. [Ref. No. 46.] Heathy bank near Holmsley Station, S. Hants, May 17, 1925. The common form of the heaths of the New Forest, noticeable for its floriferous habit, lilac tint in flowers, and whitish spurs.—P. M. HALL

Viola Riviniana Reichb., var. *vicina* (Martr.-Don.), forma *nemorosa* Neum. [Ref. No. 33.] Peak Copse, Upham, S. Hants, May 10, 1925. Growing in the same wood as Ref. No. 31, but not actually with it. This plant is very distinct from the type [Ref. No. 31] on account of: 1—Its smaller habit. 2—The deeper colour of its flowers, which have a purple tint in them nearly as deep as that of *V. odorata*. The spurs also are more deeply tinted than in the type. The deeper colour of the flowers may be seen in many of the dried specimens, but the colour of the spurs is not preserved. 3—The leaves have longer and more tapering apices, resembling those of *V. sylvestris* Lam. in outline. *V. sylvestris* and/or its variety *punctata* grow with this gathering, and fresh plants of this gathering submitted to Mrs Gregory were named by her "*Riviniana* × *sylvestris*." I had not pointed out to her, however, that this plant grew in large numbers and remained quite uniform. Plants which are clearly hybrids also occur in this station, but only in small numbers as isolated examples. With regard to nomenclature, I have followed the second edition of the *British Plant List* in equating var. *vicina* with forma *nemorosa* Neum., but this may have to be revised. In my opinion, however, whatever name is correct, this plant is worth varietal rank, certainly more so than forma *minor*, which now appears in the List as var. *flavicornis* (Forst.), and possibly more so than var. *diversa* Greg. This plant growing with the type and keeping distinct from it cannot be a mere "ecad," which may prove to be the proper status of both *diversa* and *minor*, which in certain situations approximate very closely to one another.—P. M. HALL.

Viola odorata L. [Ref. No. 68.] Wood at East End, North Leigh, Oxon, April 6, 1928. Sent for comparison with Ref. No. 73. No *imberbis* seen.—P. M. HALL.

Viola odorata L., var. *praecox* Greg. [Ref. No. 73.] Plantation near Woodstock, Oxon, April 6, 1928. Living plants from this station were submitted to Mrs Gregory in 1914, and passed by her as var. *praecox*, with the remark that the leaves were hardly so acute as in some examples. Certainly it is very different from Somerset *praecox* sent by Miss Roper in February 1919, in which the leaves are very much more acute. The Oxford plant does not appear to be particularly early flowering, as it was just coming into flower on March 11 of this year. Later leaves from cultivated plants do not become notably more acute than those of the type. In a fresh state this plant is more distinct from the local type [Ref. No. 68] than might appear from dried specimens. The flowers are smaller and much darker, while the leaves are of rather a bright green, smaller but only very slightly more acute. This plant is remarkable for its very long, slender, rooting stolons, and covers a lot of ground to the exclusion of any other *odorata* form. No examples of forma *imberbis* were seen. This plant has many resemblances to *V. multicaulis* Jord., and is very similar to the plant distributed under that name by the Secretary from Bladon, Oxon, in 1914. At South Kensington the sheet of *V. multicaulis* Jord. in the Standard Herbarium shows a great likeness to the Woodstock plant, but in the General European Herbarium it is more variable. This name, however, cannot be admissible for this plant if it is a variety of *odorata*, as all authorities since Jordan concur in treating his *multicaulis* as a hybrid. Owing to the plant occurring here in great numbers but absolutely uniform, and in the absence of any other form of *odorata*, hybrid origin may, in this case, I think, be ruled out. *V. hirta* occurs here very sparsely, and there is one patch of × *permixta* [Ref. No. 74].—P. M. HALL.

Viola odorata L. × *hirta* L. = × *permixta* (Jord.). [Ref. No. 74.] Plantation near Woodstock, Oxon, April 6, 1928. So named in 1914 by Mrs Gregory. Growing in several large clumps with Ref. No. 73, the other parent *V. hirta* L. occurring near by, but in very small quantity. The only flower seen this year was very large, of a handsome reddish purple and scented. It comes nearest to *permixta* of the named hybrid forms on account of its short stolons and shape of leaves.—P. M. HALL.

Viola odorata L. × *hirta* L. = × *permixta* (Jord.). [Ref. No. 83.] Wood between Eartham and Slindon, W. Sussex, April 8. 1928. Growing in a large patch with one of the parents, *V. odorata* L., var. *dumetorum* (Jord.), forma *imberbis* (Leight.). The other parent, *V. hirta* L., grew on the verge of the wood nearby. The flowers had the slatey-bluish tint of *hirta* and sharply reflexed spurs, but were faintly scented. It is impossible to equate these hybrids exactly with the named form. All one can say is that this gathering, though very different from No. 74, still comes nearer to *permixta* than any other of the named hybrids. —P. M. Hall.

Viola hirta L., var. *propera* (Jord.) Gillot. [Ref. No. 14.] Chalky turf, Farley Mount, S. Hants, April 18, 1925. Distinguished by its dwarf habit, small foliage, and relatively large flowers, and therefore presumably to be referred to var. *propera* (Jord.) Gillot, although not exhibiting the broad sepals said to be characteristic of that variety (see *British Violets*, p. 22). This variety seems to occupy a place intermediate between the type and var. *Foudrasii* Jord., which is much smaller and glabrescent.—P. M. Hall.

Viola hirta L., var. *variegata* Greg. [Ref. No. 15.] Chalky turf, Farley Mount, S. Hants, April 18, 1925. Growing with Ref. No. 14, and only differing from it in colour, which is white, more or less splashed with blue-violet, and in the upper petals, which are slightly narrower and have a tendency to reflex, giving the flower a less rounded appearance. A plant grown on in cultivation produced hirsute capsules, which places it under var. *variegata* Greg. ("angles of capsules clothed with long hairs," *British Violets*, p. 24) rather than var. *lactiflora* Reichb., which has glabrous capsules. It seems to me preferable to rank this plant as a colour sub-variety = *V. hirta* L., var. *propera* (Jord.) Gillot, sub-var. *variegata* (Greg.).—P. M. Hall.

Viola agrestis Jord. [Ref. No. 2423.] Allotment ground, Lexden, N. Essex, September 9, 1928. I have found *V. agrestis* in a number of Essex localities, but nothing has hitherto been authenticated, I believe, for v.-c. 19.—G. C. Brown. "Yes, *agrestis* Jord. Mr Brown is mistaken, however, in thinking that there is no previous authenticated record. I have named *agrestis* for R. W. Butcher from Saffron Walden (see *Rep. B.E.C.*, 195, 1926). I have also seen a plant from Dr Druce labelled 'Ansell,' but I do not know in which of Watson's very unnecessary and unnatural subdivisions of the county this place lies."—Drabble.

Viola agrestis Jord., appr. *Deseglisei*. Railway bank, Hanslope, Bucks, July 1928.—G. C. Druce. "Yes, *V. agrestis*. As Dr Druce says, it approaches *Deseglisei* in its somewhat upright habit, but the general texture, colour, and hairiness are those of typical *agrestis*."—Drabble.

Viola agrestis Jord. [Ref. No. 128.] Oat field, Racton, W. Sussex, June 27, 1928. [Ref. No. 196.] Oat stubble, Racton, W. Sussex, April

23, 1928. The former gathering from growing corn is an uncharacteristic, erect, simple-stemmed plant. The later gathering from the stubble of the same field shows the long widely spreading branches of *agrestis*.—P. M. HALL. "The oat field gathering is not *agrestis*, of course. My sheet is *V. segetalis*, f. *obtusifolia* (Jord.). The oat stubble plant is probably the same. It may have grown from seed of the June plants. Taken alone, it rather suggests *V. arvatica* Jord., but the evidence seems to be against this. I have often pointed out that *segetalis* and f. *obtusifolia* when flowering, in an immature condition, may simulate *arvatica*."—DRABBLE.

Viola segetalis Jord. [Ref. No. Z.36.] Clay Hill, Burghfield, Berks, October 1, 1928. Growing on the damp border of a cornfield, in a strip of weeds which the farmer did not trouble to cut. Growth very erect and fine.—J. E. LOUSLEY. "My specimen is f. *obtusifolia*, which I regard as a mere form of *segetalis*."—DRABBLE.

Viola ruralis Jord. [Ref. No. FF.49.] Minster Lovell, Oxon, June 1928.—G. C. DRUCE. "Yes, *ruralis* Jord."—DRABBLE.

Viola anglica Drabble. Roundhurst. Blackdown, W. Sussex, August 17, 1928.—R. J. BURDON. "Yes, *V. anglica*."—DRABBLE.

Viola lutea Huds. Pasture by Mollfryn Reservoirs, Radnorshire, August 20, 1928.—R. MELVILLE. "Yes, *V. lutea* Huds., unusually hairy for the inland plant."—DRABBLE.

Viola lutea Huds., var. *amoena* Hensl. Ardverikie Forest, W. Inverness, July 27, 1926.—W. A. SHOOLBRED; comm. NATIONAL MUSEUM OF WALES. "Yes."—DRABBLE.

Viola Curtisii Forst. Borve. S. Harris, July 1928. These are the var. or forma *Forsteri*.—G. C. DRUCE. "Yes. I have already named this plant for Dr Druce. Very useful material with the subterranean stems well shown. What is needed for determination of the pansies is not artistically pretty sheets with beautifully dried flowers but complete and mature plants. Very generally the use of the flower for diagnostic purposes is at an end when its relative size has been seen, while without the underground parts and lower branches satisfactory determination is impossible."—DRABBLE.

Viola Pesneaui Lloyd & Foucaud. [Ref. No. Z.27.] Sand dunes, Ambleteuse, Pas de Calais, France, May 30, 1928.—J. E. LOUSLEY. "Quite possible; my sheet carries one immature plant without any development of subterranean twiggy branches and three fragments."—DRABBLE.

Dianthus gallicus Pers. [Ref. No. 167.] St Ouen's Bay, Jersey, September 2, 1928.—P. M. HALL.

Silene conica L. Maritime sands, St Ouen's Bay, Jersey, May 14. 1928.—L. Arsène. "A very local plant of sandy heaths and pastures from Forfar and East Lothian to Kent. Occasionally it turns up in a casual way in gardens, like *S. noctiflora*. The principal features of it are the 30-ribbed calyx and subulate acuminate teeth that close over the seed vessel, forming a cone."—Fraser.

Silene nutans L., var. *Smithianus* Moss. Nottingham Castle Rocks, July 1926.—R. Bulley.

Silene dichotoma Ehrh. Splott, Cardiff, May 1928. This plant is thriving quite well in this locality, and has been for the last three years, but sooner or later it will disappear as the spot where it grows is right on the edge of common land.—R. L. Smith.

Lychnis macrocarpa B. & R. Splott, Cardiff, May 1928. This plant is growing in company with *Silene dichotoma* Ehrh., and the same remarks apply. Nearly all the capsules produced by this plant are eaten by insects before the seeds can ripen, thus preventing the increase of the plant in numbers.—R. L. Smith.

Arenaria serpyllifolia L., var. *viscidula* Roth. E. Coast N. of Nagden Marshes, Kent, September 15. 1924. Not an extreme form of this variety which is sometimes plentifully bedecked with adhering sand grains but glandular enough, I believe, to be so named. These plants grew on shingly ground and mobile sands did not occur there. The ripe capsule is slightly more inflated than in type and the sepals more strongly veined.—C. E. Salmon. "Yes; var. *viscidula* Roth, *i.e.*, the glandular form of ordinary *A. serpyllifolia*, not the glandular form of var. *macrocarpa* Lloyd (*A. Lloydii* Jord.), which is *sphaerocarpa* Tenore. Hooker (*Students' Flora*, ed. iii.) wrongly made *A. sphaerocarpa* Tenore synonymous with his *A. serpyllifolia* proper and this error has been perpetuated, *e.g.*, in Townsend's *Flora of Hampshire*."—Drabble.

Sagina apetala Ard. Canal Wall. Lenton, Nottingham, July 1, 1928.—R. Bulley.

Spergularia salina Presl, var. *neglecta* (Kindb.). Wet ground, Par Sands, E. Cornwall, June 1928.—F. Rilstone.

Hypericum quadrangulum L. (*H. dubium*). Earlston, Berwick, 1926.—I. M. Hayward.

Tilia cordata Mill. (Barren). Mawsley Wood, Northants, September 1928. Fruiting specimens were not in evidence.—G. C. Druce.

Tilia cordata Mill. Offa's Dyke, W. Gloster, July 30. 1920.—W. A. Shoolbred; comm. National Museum of Wales.

Geranium sanguineum L. Wooded hill-side between Dyserth and Cwm, Flintshire, North Wales, June 2, 1928.—C. WATERFALL.

Geranium Endressii J. Gay, var. *Endressii*, forma *luxurians* Turrill. Goonbell, St Agnes, W. Cornwall, August 30, 1928.—F. RILSTONE.

Geranium Endressii J. Gay, var. *Thurstoniana* Turrill. Goonbell, St Agnes, W. Cornwall, August 30, 1928. I was unfortunately too late for satisfactory specimens of these plants as they were nearly past flowering on August 30.—F. RILSTONE.

Geranium columbinum L. Stony hedge bank, above Bishops Leighton, South Devon, June 14, 1928.—C. WATERFALL.

Geranium Robertianum L., floribus albidis. Hort. Hitchin. From Worcestershire, Mrs EDWARDS, June 14, 1928.—J. E. LITTLE. "Presumably var. *leucanthum* Asch. & Graebn. Syn. Mitt.-Eur. Fl. = *G. Robertianum* L., fl. albo., Gaud. Fl. Helv."—A. E. WADE. "There is more than one white variety of this polymorphic species, including one with pale yellow anthers. These specimens have purple anthers and white pollen. White-flowered forms reproduce themselves from seeds. I have observed a long colony that has had white flowers since the beginning of this century. In France the species varies with purple, rose, and white flowers."—FRASER.

Erodium moschatum L'Hérit. Wool alien. [Ref. No. 762.] Great Wymondley, Herts, September and October 1928. Although the plants were strongly glandular, no musky smell was discernible. In material at Herb. Mus. Brit. several collectors have remarked upon the absence of any smell of musk in specimens gathered by them.—J. E. LITTLE.

Oxalis tetraphylla Cav. Alien, Mexico. Introduced in fields and growing in quantity at La Haule, Jersey, September 10, 1928.—L. ARSENE.

Trigonella M. procumbens (*caerulea*) Reichb. Burton-on-Trent, Staffs, July 1928.—G. C. DRUCE.

Medicago hispida Gaertn., aggr. Great Wymondley, Herts, August and September 1928. In this case a wool alien, due to the employment of shoddy waste as manure.—J. E. LITTLE.

Medicago arabica Huds. (*M. maculata* Sibth.). Hedge bank in lane, Bishop's Teignton, South Devon, June 12, 1928.—C. WATERFALL.

Medicago minima Desr. Wool alien. Great Wymondley, Herts, September and October 1928. The average size of these plants was very much larger than of our native plants as I have seen them on the breckland of Suffolk. One plant in particular was 2 ft. 6 in. long, with stout stems and large leaflets. Doubtless this was due to the stimulus of the shoddy-waste used as manure.—J. E. LITTLE.

Trifolium ochroleucum Huds. Roadside near Cambridge, July 1928. —J. W. LONG.

Anthyllis Vulneraria L. On chalk cutting, Upton, Berks, June 1928. This has been sent to M. P. Riencourt de Longpré for his critical determination.—G. C. DRUCE.

Anthyllis Vulneraria L., var. *coccinea* L. Short sandy turf, Sennen Green, near Land's End, W. Cornwall, August 25, 1913.—R. B. ULLMAN. "Communicated by Ullman as *Anthyllis rubra* Gouan but is it not *Vulneraria* L., var. *bicolor* (R. & F.) ?."—P. M. HALL.

Vicia sylvatica L., f. *alba*. Wooded limestone slope near the Avon, below Tomintoul, Banff, July 18, 1905.—W. A. SHOOLBRED; comm. NATIONAL MUSEUM OF WALES.

Vicia Cracca L. (Fruits). Folly Alder Swamp, Hitchin, Herts, September 6, 1928.—J. E. LITTLE.

Vicia ——. [Ref. No. PP.612.] Ware, Herts, September 1929.—G. C. DRUCE. "Is not this *V. villosa* Roth?"—BRITTON.

Vicia lutea L. Sandy or rocky places among grass; bushes near the sea, valley between St Brelade's Church and La Moye School, Jersey, June 20 and July 21, 1928.—L. ARSENE. "Quite correct. A maritime plant, which must be looked for on the sandy and gravelly sea shore. Very marked features are the upper teeth of the calyx shorter than the tube of the corolla, and the lower three longer than it; as well as very short ovate stipules, half hastate towards the base of the stem. All the characters are present in my specimens, except a root to show that the plant is annual."—FRASER.

Vicia angustifolia L., var. *Bobartii* Forster. Railway banks at Goods Station, Dyserth, Flintshire, June 2, 1928.—C. WATERFALL. "*V. angustifolia*. Not var. *Bobartii*, which is a more slender plant and has upper leaves linear."—I. M. ROPER.

Vicia angustifolia L., var. *Bobartii* Koch. Cliff slopes, Polperro, E. Cornwall, June 1928. A Scandinavian specimen of var. *Bobartii*, which has recently come into my possession, is an excellent match of this Polperro plant.—F. RILSTONE.

Vicia angustifolia (L.) Reichard. [Ref. No. FF.50.] Albury, Herts, May 1928. This has also been sent to our French expert.—G. C. DRUCE.

Vicia hirsuta Gray. (Fruits). Purwell Field, Hitchin, Herts, July 20, 1928.—J. E. LITTLE.

Vicia tetrasperma Moench. (Fruits). Purwell Field, Hitchin, Herts, July 20, 1928.—J. E. LITTLE.

Rubus idaeus L., var. *obtusifolius* Willd. Misk Hills near Hucknall, Notts, July 21, 1928.—R. BULLEY. " Clearly not *obtusifolius* but depauperate *idaeus* L."—RIDDELSDELL.

Rubus Lindleianus Lees. By stream, Polperro, E. Cornwall, panicles July 9, 1928; leaves July 23, 1928.—F. RILSTONE. "Yes; nearly typical." —RIDDELSDELL.

Rubus argenteus Wh. & Nees, f. *glandulosa*. [R.N. 1900, 1903, 1909.] Sandling Park, E. Kent, July 18, 1927, seen in one copse only. Petals long, narrow elliptic, opening pink, afterwards nearly white. Sepals strongly reflexed. A shade form. Also from the South Downs around Fridon and up to the top of Cissbury Ring and slopes near Devil's Dyke, Brighton, W. Sussex [R.N. 1505 to 1510], July 1926. Sepals less strongly reflexed. This is the first record from E. Kent of this plant, or indeed of any form of *R. argenteus* Wh. & Nees. It is a plant I have collected and studied for many years and have had sent to me from Wilts and other counties. It is also the plant from Reigate Hill referred to by Rogers under *Gelertii* as passed by Gelert himself (Rogers *Handbook*, p. 56). True *Gelertii* does, I believe, occur in England, and a glandular form of true *argenteus* does occur in Surrey. But this plant is neither; nor (if we are to trust Sudre's description and plate) is it *R. alterniflorus* M. & L. as suggested in *B.E.C. Report*, 1927, p. 505. It is very different from *R. argenteus* Wh. & Nees as seen in Sussex, Cornwall, Monmouth, Glamorgan, and many other counties, in colouring, stem, etc. The most remarkable critical feature is provided by the panicle rachis which is covered closely with felt or very short hair (no long hair), with many or few glands, acicles, and long gland-tipped bristles, and is most variable in outline and leafiness. The plant of our list to which it is nearest critically is Rogers' *podophyllus*, I think, but it seems to be a form which is new and needs description and a name. There is an allied form which Barton and I found in quantity in N. Wales. This is even closer to *podophyllus*, but has peculiar features of its own which keep it well apart.—H. J. RIDDELSDELL " A shade form of *R. alterniflorus* M. & L."—WATSON.

Rubus Schlechtendalii Wh. & Nees. Shotover Hill, August 13, 1926 [R.N. 1565, 6]; near Wigginton Heath, August 20, 1926 [R.N. 1569]; Freeland, October 6, 1926 [R.N. 1570]; furzy field below Oatley Hill, July 31, 1926 [R.N. 1567], all v.-c. 23, Oxon. None quite typical and more under Sudre's *anglicus*. The nearest to Weihe's type is R.N. 1570 which, however, lacks the very large flowers and elongated fruits of the Mennighüffen plant. This type is described and figured by Weihe and, as is plain from my specimens from that locality, has a stem with decided but blunt angles, strong stout-based prickles moderately long and not infrequently falcate and stem sometimes a little sulcate. The Mortimer Common plant (Set No. 84 on which Sudre founded his var. *anglicus*) has stems rather more sulcate and rather less hairy than the Menninghüffen plant, though still quite hairy; inflorescence shorter (not longer) but much less leafy; with rachis fork still weak though rather stronger than in type and much more numerous; peduncles shorter; branches patent-erect instead of strongly ascending, fruit smaller and rounder; leaf serrature entirely different. In fact my two sheets of Set No. 84 (Mortimer Common) do not agree with Sudre's description of his var. *anglicus*, which probably was made hurriedly or by some assistant with the result that the first half of it is apparently either incorrect or deceptive. *Schlechtendalii* is a variable species, further complicated by numerous forms (such as R.N. 1567 now distributed) intermediate between it and *macrophyllus*. Sudre does not seem to have got the hang of them.—H. J. RIDDELSDELL.

Rubus Godroni Lec. & Lam. Near Compton Wynyates, Warwick [R.N. 1881]; Sibford Heath, Oxon [R.N. 1882, 3], August 17, 1927; hedge near Paddlesworth [R.N. 1884], and near Sandling Junction [R.N. 1888], E. Kent, July 1927. *R. propinquus* P. F. Muell., to which Sudre and others refer the British *Godroni*, is in Focke's mature judgment simply *R. rhamnifolius* Wh. & Nees, a view which receives some support from Sudre's figure and description. According to Focke, *R. Godroni* proper has its headquarters in Great Britain, while *R. robustus* P. J. Muell. (renamed *dynatos* by Focke, whose batology is better than his knowledge of the classical languages) occurs here and there in England. Focke does not use the name *Winteri*. Until I see well vouched specimens of *propinquus* it seems to me best to retain the name *Godroni* Lec. & Lam. The E. Kent plant goes off from *Godroni* towards *robustus* but is not the latter.—H. J. RIDDELSDELL. "*R. Pseudo-bifrons* Sudre, not *Godroni*, which has a blunt angled stem with slender, hardly compressed prickles; a roundish terminal leaflet glabrous above, and bright pink flowers with stamens much exceeding the styles."—WATSON.

Rubus leucanthemus P. J. Muell. ? Fittleworth and Cowdray Park, W. Sussex, July 1926 [R.N. 1595, 1610, 1612, 1609]. This is one of the English forms which needs describing and naming. It is best for the moment to use the above name as a label which will not mislead. It is not *leucanthemus* P. J. Muell., for that is just white-flowered *leucostachys*; and it is not, I am sure, identical with Focke's *fuscus* f. *hirsutissima parce glandulosa* (=Sudre's *hirsutissimus*), being very different in panicle and leaf. I have *leucanthemus?* from many localities. It ranges from Dorset to Westmorland and Kent; and the *fuscus* f. from several localities. The two are unmistakably different.—H. J. RIDDELSDELL. "*R. vestitus*, forma *umbrosa*, nothing more."—WATSON.

Rubus lasioclades Focke. Paddelsworth Court Wood, E. Kent, July 1927 [R.N. 1870]. Some members may like a specimen from Marshall's locality, whence it was first identified in this country by Focke. A very late flowerer. The leaves only acquire their ragged look as they mature.

The probability is that it is a fixed hybrid of *leucostachys* and *rusticanus*, the species with which it usually occurs.—H. J. RIDDELSDELL.

Rubus adenanthus Boul. & Gill. From various spots in Cheshire, August 1926 [R.N. 1601, 2, 3, 6, 7, 8]. Well representing the Cheshire form of this species, and quite constant in all characters, except size. But it is not exactly the same as the Jersey plant which is a little less glandular and has rather stronger prickles and a more open panicle. Unfortunately the above name is impossible, as there is an earlier use of it for an extra-European species. The whole of our series from Jersey, Glamorgan, Cheshire, etc., will have to be newly described and given a name. Sudre reduces *adenanthus* Boul. & Gill. to a variety of *macrostachys* P. J. Muell., but it does not appear that he applies his name to the Jersey plant.—H. J. RIDDELSDELL. "I think not *adenanthus* but *R. granulatus* M. & L., to which Babington's *R. pygmaeus* (later changed to *R. praeruptorum*) belongs. Sudre says that *R. Bloxamianus* is the same thing as *R. granulatus*. This is, I feel sure, a mistake, and the way is therefore left open for my identification above."—WATSON.

Rubus mucronatoides Ley. Highmoor Wood, Almeley, Herefordshire, September 21, 1926 [R.N. 1613, 5, 6.]. Poor and late gathered, to fill gaps in herbarium until better specimens are available.—H. J. RIDDELSDELL. "Yes."—WATSON.

Rubus setulosus Rogers, forma. Freeland, Oxon, July 1927, [R.N. 1858, 1860, 2, 3, 6, 8, 1922]. Placed by Rogers under *anglosaxonicus* Gelert, which appears to be identical with *apiculatus* Wh. & Nees. Focke, at least, thinks so; though he omits all mention of *setulosus*, well marked form though it be. If it is kept under *apiculatus*, Rogers' name stands, but, if it is treated as a species, the name must be altered. Sudre arranges it as a var. *angusticuspis* of *obtruncatus* P. J. Muell. These Freeland plants may be well compared with Rogers' Cinnor Hill, 1891, sheet of *setulosus*, which differs somewhat from the common west country type, but is included in his description (1892). The chief difference lies in the broadish base of the terminal leaflet, which is frequently ovate or oval (not obovate) even to roundish; points shorter, etc. But some Freeland plants are nearer description than others.—H. J. RIDDELSDELL. "*R. cognatus* N. E. Br., as amended by Rogers."—WATSON. "But there is already a *cognatus* Boul. I put it as *Browneanus* in the List."—DRUCE.

Rubus echinatoides Rogers, forma. Sprouston, E. Norfolk, July 1925 [R.N. 1414, 1415, 1417]. Rogers so named this plant many years ago as a form with weak prickles.—H. J. RIDDELSDELL. "This is *Lintoni*."—WATSON.

Rubus rudis Weihe. In open woodland on Wotton Hill, West Gloucester, August 7, 1928.—J. W. WHITE. "Right."—RIDDELSDELL.

Rubus Newbouldii Rogers = *R. oigocladus*, var. *Newbouldii* of Rogers' *Handbook*. From Malpas neighbourhood, Cheshire, August 1926 [R.N. 1647, 8, 9, 1651], and from Troy Wood, Monmouth [R.N. 1653, 4]. All, I believe, inseparable from Rogers' plant, though varying locally. Focke connects *Newbouldii* probably with *mucronatus* Blox., as a doubtful form, which mimics a constant species and *Newbouldii* is certainly variable. Focke, of course, studied it growing in England under various forms. Sudre, who apparently only saw dried Cheshire specimens, puts *Newbouldii* as a definite variety of *R. apiculatus*.—H. J. Riddelsdell. " The Troy Wood plant is *R. apiculatus*, sub-sp. *restitiformis* (Rogers)." —Watson.

Rubus regillus Ley, var. Freeland, Oxon, July 1927 [R.N. 1837 to 40, 1842]. I think this goes to *regillus*, the stem armature being right; but it may possibly belong to Rogers' *oigocladus*, aggr. Rogers' description of *regillus* (*Handbook*, p. 67) needs amplifying. The sepals are (as he says) closely reflexed, long and white in July specimens from Herefordshire. But in September specimens they often rise very much, even to clasping. They are externally dark grey with pale border. Some of his own specimens show this. The Oxon variety has usually a darker stem, of same colour; terminal leaflet less truncate with rather shorter point; stamens very short; petals white, small, and sepals rising earlier. —H. J. Riddelsdell. " This is type *fuscus* Weihe. Weihe & Nees quote ' Weihe ex Bluff & Fingerhuth'."—Watson.

Rubus Babingtonii Bell-Salt. Slopes of downs near Devils Dyke, Brighton [R.N. 1666, 1669]; edge of Clapham Wood, Findon [R.N. 1664]; Storrington [R.N. 1662, 1663, 1683], all from W. Sussex, July 1926. Also a variant form from Larkton, Cheshire, August 1926 [R.N. 1670]. And a form which may be a hybrid near Findon, W. Sussex, July 1926 [R.N. 1660].—H. J. Riddelsdell. " Yes."—Watson.

Rubus sertiflorus P. J. Muell. Riggs Wood, Sellack, Herefordshire, September 21, 1927. Late gathered and so far untypical. Focke doubts if our *sertiflorus* is identical with Genevier's and is sure that Mueller's is not. Sudre, on the contrary, says that Mueller's and Genevier's are the same and that ours is different. He renames our plant *radulicaulis*. —H. J. Riddelsdell. " *R. radulicaulis* Sudre, not *sertiflorus* P. J. M., which has felted, very narrow cylindric panicle, with slightly discolourous leaves and white flowers and approaches *Genevierii*."—Watson.

Rubus fuscus Wh. & Nees, forma. Wolford Heath, E. Gloster and Warwick, August 1926 [R.N. 1712, 3, 5]. In great quantity over a large piece of wooded heath. Rogers was very clear in placing it to west country *fuscus*. It differs from W. & N.'s type chiefly in the shape of terminal leaflet, and perhaps in the rising sepals. W. & N.'s panicle, as pictured, is, however, very young.—H. J. Riddelsdell. " *R. Newbouldii* (Rogers)."—Watson.

Rubus fuscus Wh. & Nees. Near Findon, W. Sussex, July 1926 [R.N. 1688, 9], and a form with incised toothing and more compact panicle from Wigginton Heath, Oxon, August 20, 1926 [R.N. 1686]. A very variable species.—H. J. RIDDELSDELL. "*R. rufescens* L. & M."—WATSON.

Rubus glareosus Rogers & Marshall. Downs near Devil's Dyke [R.N. 1707, 1709]; Fittleworth [R.N. 1704, 5]; Midhurst [R.N. 1700, 1, 2, 3, 6] all from W. Sussex, July 1926. Druce in his *British Plant List* identifies this with *R. monachus* Jens. The latter name does not appear in Focke or Sudre and I have no means of checking the identification. The Midhurst, etc., form of *glareosus* is a slight modification of the plant common about Godalming, Haslemere, etc.—H. J. RIDDELSDELL. "Yes." —WATSON.

Rubus hystrix Wh. & Nees, var. *bercheriensis* Druce. Cissbury, and edge of Clapham Wood, Findon, W. Sussex, July 1926 [R.N. 1722, 1725, 1727, 8]. This var. is hardly worth distinguishing from *hystrix*. Further experience shows that well developed leaves are no narrower than in type though the toothing is less strongly developed.—H. J. RIDDELSDELL.

Rubus adornatus P. J. Muell., var. Gallanty Bank, Cheshire, August 1926 [R.N. 1731, 2, 3]. Our ordinary English form. Also in and near Sandling Park, E. Kent, July 1927 [R.N. 1818 and 1819]. This is a weak woodland form with different shaped and toothed leaflets. Sudre dissociates our plant from the Rhineland *adornatus*, and Focke does not ascribe *adornatus* to England. But Rogers carefully compared our form with the Rhineland plant and, except in the terminal leaflet and the strongly declining prickles, found it just the same. It certainly differs from *hystrix* more than Sudre's description of his var. *Murrayi* does. It is probably put best as a variety of *adornatus*, and if so should be so described and named.—H. J. RIDDELSDELL. "This is *cavatifolius* P. J. M. I have collected it at Putney Heath, and have seen a specimen from Horsham, Sussex."—WATSON.

Rubus Powellii Rogers, form. Shotover and Freeland, Oxon, August and October 1926, rather different forms [R.N. 1735, 1734]. The association of *Powellii* with *hystrix* might well be abandoned. It should stand as above.—H. J. RIDDELSDELL. "Yes."—WATSON.

Rubus hostilis Muell. & Wirtg. Wolford Heath, E. Gloster, August 8, 1926 [R.N. 1736]. This identification of our English plant, made at first by Focke, must remain doubtful at present. In his *Species Ruborum* he does not give *hostilis* for England, and Sudre has not seen English specimens.—H. J. RIDDELSDELL. "*R. angustifrons*, var. *pallidisetus* Sudre."—WATSON.

Rubus Durotrigum R. P. Murray, forma. Near Fittleworth, W. Sussex, July 1926 [R.N. 1742, 3]. Very near type, differing chiefly in the elongated panicle.—H. J. RIDDELSDELL. "Yes."—WATSON.

Rubus minutiflorus P. J. Muell. Near Sapey Common, Herefordshire, September 22, 1927 [R.N. 1804]. Though this has long passed by the name of *minutiflorus*, it is not, I believe, Mueller's plant. It has much of the look of *pallidus* Wh. & Nees in some ways, but is probably a local (Herefordshire and Worcestershire) form which needs describing and placing among Rogers' *sub-Bellardiani*. Continental botanists differ widely as to *minutiflorus*.—H. J. RIDDELSDELL. "*R. angustifrons* Sudre. *Minutiflorus* has broad ovate leaves."—WATSON.

Rubus corylifolius Sm., nearest var. *sublustris* Lees, but stem rather angular, and prickles not much scattered. Cross-roads near Rolbright Stones, Oxon, August 3, 1926 [R.N. 1769]. I believe that the *corylifolius* of the Scandinavians is our *sublustris*.—H. J. RIDDELSDELL. "Yes."—WATSON.

Rubus conjungens Bab. Near Chalcombe, Northants, August 10, 1926 [R.N. 1775, 6]; Oatley Hill, Warwick, July 31, 1925 [R.N. 1773].—H. J. RIDDELSDELL. "Yes."—WATSON.

Potentilla argentea L. [Ref. No. 2422.] With alien spp. at Hythe Quay, Colchester, N. Essex, August 18, 1928. Certainly introduced with alien species. A much more robust and taller form than that found in native localities in the district.—G. C. BROWN.

Potentilla procumbens Sibthorp. [Ref. No. 3376.] Towyn, Merioneth, July 21, 1928. These specimen from Towyn are interesting from the circumstance that (apart from *P. Anserina*) *P. procumbens* appears as the only representative of the genus in that vicinity. *P. reptans* and *P. erecta* (*Tormentilla*) seem quite absent. I am not acquainted with a similar instance where *P. procumbens* occurs in a district unaccompanied by either *P. reptans* or *P. erecta*.—C. E. BRITTON.

Potentilla erecta × *reptans*. [Ref. No. 3341.] Banstead Down, Surrey, July 1, 1928. Some specimens closely approach *P. procumbens* from Towyn but differ essentially in being barren plants, whilst the Towyn *procumbens* fruited plentifully. The influence of the parent species upon the characters of the plants is well shown though, on the whole, *P. erecta* is perhaps dominant.—C. E. BRITTON.

Alchemilla pratensis Schmidt. Middleton-in-Teesdale, Durham, June 1928.—G. C. DRUCE. "Typical plants from the same locality as var. *aprica* G. C. D. My specimens are rightly named *A. pratensis*. The stems and petioles are densely covered with spreading hairs while the pedicels and urceoles are glabrous. A feature of the specimens is their small size and they must have come from a high elevation. In the valleys of Kincardineshire and N. Aberdeen the whole plant is very much larger, with broad leaves."—FRASER.

Alchemilla alpestris Schmidt, f. *aprica*. Middleton-in-Teesdale, Durham, June 1928. These small compact plants were gathered on a dry bank overlooking the Tees at Middleton, Durham.—G. C. DRUCE.

Alchemilla alpestris Schmidt. High Force, Durham, June 1928.—G. C. DRUCE.

Rosa stylosa Desv., var. *pseudo-rusticana* Crép. Field, Featherbed Lane, Clutton, N. Somerset, July 10, September 18, 1928.—I. M. ROPER. " A *stylosa* form, but not var. *pseudo-rusticana*. Its globose fruit makes it var. *lanceolata*. The flowers appear to have been pink. Those of *pseudo-rusticana* should be white, and it has other important differences."—WOLLEY-DOD.

Rosa stylosa Desv., var. *systyla* Bak. [Ref. No. 3417.] Headley, Surrey, August 25, 1928. Identified by Lt.-Col. A. H. Wolley-Dod, who has seen the whole gathering. The Colonel's comment is " All the characters point to *R. stylosa*, var. *systyla*, except the important one of the disc, which is only slightly conical. Keller insists on a conical disc for all varieties of *R. stylosa* but, I think, this may pass. It is interesting as showing the passage to the Deseglisei group of *R. dumetorum*, which led to the error in naming so many specimens from S.W. England *R. stylosa*, var. *leucochroa* Desv., instead of *R. dumetorum*, var. *incerta* W.-Dod."—C. E. BRITTON.

Rosa canina L., var. *curticola* (Pug.). Filton Meads, Bristol, W. Gloster, July 8, September 11, 1928. Flowers white, the styles glabrous. —I. M. Roper. Not *curticola*, which is one of the Transitoriae. This belongs to the Dumales and is quite a good form of var. *cladoleia* (Rip.), the name I now use instead of var. *leiostyla* (Rip.)."—WOLLEY-DOD.

Rosa dumetorum Thuill., var. *ramealis* (Pug.). Michelgrove Woods, W. Sussex, October 3, 1928.—I. M. ROPER. " This cannot be var. *ramealis* on account of its hispid peduncles. It has some marked features of the Stylosae, especially the glabrous styles on a conical disc, with longish, weakly hispid peduncles. The leaflets also conform to those of *R. stylosa* vars., but I never saw any member of that species with such narrow fruits. It is more likely to be some new variety of *R. stylosa* than one of the Deseglisei group, which is the only alternative."—WOLLEY-DOD.

Rosa dumetorum Thuill., var. *incerta* Déség. Thicket, Featherbed Lane, Clutton, N. Somerset, July 10, September 18, 1928.—I. M. ROPER. " I think neither var. *incerta* nor a *dumetorum* form at all, but surely the same as Miss Roper's rose from the same station, labelled *R. stylosa*, var. *pseudo-rusticana*, which I have called var. *lanceolata*. The connection between forms of var. *incerta* and *R. stylosa* is often very close." —WOLLEY-DOD.

Rosa glauca Vill., var. *Afzeliana* (Fries). Blore, Staffordshire, September 1928. Professor G. Boulanger suggested this name for the very handsome *Rosa glauca* which, from its round red fruits and persistent sepals, at a distance looked like a *mollis* Rose. One may add that, as long ago I had discovered, *R. dumalis* Becket cannot be applied to our biserrate *canina* forms, since it is really synonymous with an older name than *glauca* Villars. Strictly speaking, it should replace it, but I am too weak-kneed to make such a confusing change so I leave *Afzeliana* Fries as subordinate to *R. glauca*.—G. C. DRUCE. "Correctly named. It might be written as Dr Druce has written it, which is certainly better than making *R. Afzeliana* Fr. the sub-species, as is done on the Continent, since *R. glauca* Vill. antedates it considerably, but I prefer the notation *R. glauca* Vill., var. *Reuteri* Cott."—WOLLEY-DOD.

Rosa micrantha Sm., var. *trichocarpa* Rouy. [Ref. No. 3433.] Banstead Downs, Surrey, September 2, 1928. Identified by Lt.-Col. A. H. Wolley-Dod, who has seen the whole gathering, and comments as follows: "I can match this exactly by other Surrey specimens, and feel sure that Dr Keller would pass it, though he shares my doubt as to Rouy's variety being the same as Boullu's." I feel some degree of uncertainty that this plant is correctly placed under *R. micrantha* Sm. The habit and characters point rather to *R. rubiginosa* L. from which it is separated chiefly by the glabrous styles.—C. E. BRITTON.

Rosa rubiginosa L., f. *Corstorphinae* Wolley-Dod. Aberfeldy, Mid-Perth, August 20, 1928.—J. G. GLASSFORD.

Rosa omissa Déség., f. *Sherardi* (Davies). Mawsley Wood, Northants, September 1928.—G. C. DRUCE. An *omissa* form, no doubt, though the short, erect, connivent sepals give it a strong look of *R. mollis*. But I should certainly label it *R. omissa* Déség., var. *typica* R. Kell., not *Sherardi*, which should have no subfoliar glands and presents other differences."—WOLLEY-DOD.

Rosa pimpinellifolia L., var. *rosea* Koch. Sand dunes, Le Quennevais, Jersey, July 10, 1928.—L. ARSENE.

Rosa ——. [Ref. No. Z.38.] Epsom Common, Surrey, September 9, 1928.—J. E. LOUSLEY. "This is one of the Dumales, coming nearest to var. *Carioti* (Chab.) of the names in our list, but with narrower fruit. All the fruits have broken off in my specimen, but they look as if they had had very short peduncles."—WOLLEY-DOD.

Crataegus monogyna Jacq., var. *splendens* Dr. Mawsley Wood, Northants, September 1928. The fruits are not quite so extreme in size as those of the Akeley plant in Buckinghamshire.—G. C. DRUCE.

Ribes rubrum L., var. Beaconsfield, Bucks, July 1928. Mr Fraser names this *sativum*.—Mrs WEDGWOOD.

Cotyledon Umbilicus-Veneris L. Old walls about Bishop's Teignton, South Devon, June 1928.—C. WATERFALL.

Drosera obovata M. & K. Loch Langavat, N. Harris, July 1928.—G. C. DRUCE.

Epilobium parviflorum Schreb. Damp places, Le Quennevais, Jersey, July 21, 1928. Collected on the marshy borders of the Quennevais Pond, near the Race Course. It is very likely the locality cited in Babington's *Primitiae Flor. Sarn.*, p. 35, as the habitat of a special variety. In my opinion, the Quennevais specimens do not differ from those I collected or examined elsewhere in the Island. They are not more woolly and their leaves are not wider. In some of them, all the leaves seem to be opposite, but usually the superior leaves are alternate. The Jersey plant is the same that grows on the coast of Brittany and Normandy and should perhaps be placed under variety *maritimum* Rouy. It is densely woolly, the leaves very variable, often ovate-lanceolate, rather than narrowly lanceolate, and the stem is not uncommonly prostrate or decumbent at the base.—L. ARSENE. "I am glad Bro. Louis Arsène has brought this plant forward. It is a very distinct variety and I tried unsuccessfully some years ago to find a published description that would fit it. It is not confined to the sea coast. I have gathered it in the Via Gellia near Matlock and at Somersall near Chesterfield, Derbyshire, and Dr W. J. Fordham has sent me similar plants from Bubwith, near Selby, Yorkshire. Rouy's description of var. *maritimum* in Fl. Fr. vii., p. 192. runs thus:—'*S. maritimum* Nob. [i.e. Rouy]. *E. molle* form. *maritimum* Lévl.—Plante couchée à la base, puis dressée, velue-blanchâtre, feuilles dressées et raprochées, plus larges, non étalées.' In having the leaves 'non étalées' the Via Gellia plants agree with this description more closely than do Bro. Louis Arsène's specimens, while plants on the Great Orme have broadly lanceolate or even ovate leaves and are probably truly var. *maritimum* Rouy. However, it seems probable that Bro. Louis Arsène's plant, the Derbyshire and Yorkshire plants, and that of the Great Orme are merely forms of one densely villose variety which varies somewhat in the breadth and setting of the leaves and which may include vars. *mollissimum* Lévl. and *menthoides* Boiss., as well as *maritimum* Rouy."—DRABBLE.

Epilobium tetragonum L., forma. Bradmore Pond, Northants, July 1928.—G. C. DRUCE. "Ordinary *tetragonum*, I think."—DRABBLE.

Epilobium lanceolatum Seb. & Maur. Dry places, roadsides, banks, walls, St Saviour's, Jersey, July 1. 1928.—L. ARSENE. "Has all the characters of *E. lanceolatum*, but judging by the length of the stem of one of my specimens and the withered leaves at the base it must have been growing in rank vegetation, perhaps on a grassy bank."—FRASER. "Yes."—DRABBLE. "My sheet of this represents an average form of the plant as we know it in Cornwall, but the species varies considerably. The stout congested form I this year distributed from Fowey is rather unusual and, as it grew out of a dry stone hedge, can hardly owe its robustness to good feeding. Other variations noticed are in the greater or less obtuseness of the leaf-tip and the frequent tendency to produce narrow, semi-folded stem leaves. A rather more distinct form occasionally met with is more diffuse in habit, with fewer flowers, a wavy rachis and leaves narrowly oval obtuse or somewhat lanceolate obtuse. A sheet of this form collected at St Blazey (v.-c. 2) by Dr C. C. Vigurs in 1912 bears the note ' a state, apparently shade-grown = forma *umbrosa* Haussk. Monogr. fide E. S. Marshall,' to which Dr Vigurs has added ' not shade grown.' The latter agrees with my experience."—F. RILSTONE.

Epilobium lanceolatum Seb. & Maur. Garden weed, Brookfield, Bovey Tracey, South Devon, June 1928.—C. WATERFALL. "Yes."—DRABBLE.

Epilobium lanceolatum S. & M. Banks in lane, Fowey, E. Cornwall, July 1928. Of unusually robust growth.—F. RILSTONE. "Yes."—DRABBLE.

Danaa cornubiensis Burnat. Near Burnham Beeches, Bucks, August 5, 1928. This interesting species appears to be increasing in this isolated locality, and is now in such large quantity that these specimens can be distributed without fear. In weighing the evidence for its status in this country it may be worthy of note that the neighbourhood is in some respects an outpost of the western flora. For instance the most easterly locality for the minute hepatic, *Microlejeunea ulicina*, is on a few tree trunks there.—C. V. B. MARQUAND.

Smyrnium Olusatrum L. By the Battleaxes, Wraxall, North Somerset, May 25, 1928.—J. W. White. "Rightly named. Good specimens. The leaves are often faulty, because they die away long before the large, black fruits drop."—FRASER.

Bupleurum lancifolium Hornem. Burton-on-Trent, Staffs, July 1928. —G. C. DRUCE.

Chaerefolium sylvestre (L.) S. & T. [Ref. No. FF.53.] Abingdon, Berks, June 1928. This is one of the forms of my var. *latisecta*.—G. C. DRUCE.

Oenanthe Lachenalii C. Gmel., var. *minima* Rouy & Camus. Lady's Island Lake, Co. Wexford, August 1928. Described as " Plante de 5-10 cm., ombelles petites, à 1-2 au plus à 5-8 moyons courts inégaux; involucres nuls ou oliogphylles, involucelles à folioles moins promptement caduques que celles de type, feuilles à segments peu nombreux, elliptiques ou oblongs." Cultivation should be tried to see if this is a real variety or a reduced edaphic state. It was very consistent for some distance round the brackish water of the lake, nor did I see the type near.—G. C. DRUCE. This seems to come under Rouy and Camus's description in *Fl. Fr.* vii., p. 261, but is it anything more than a dwarf state?"—DRABBLE.

Caucalis daucoides L. Burton-on-Trent, Staffs, July 1928.—G. C. DRUCE.

Caucalis nodosa Scop. Hedge bank on roadside above Bishop's Teignton, South Devon, June 14, 1928.—C. WATERFALL.

Sambucus racemosa L. Berkhampstead Common, Hertfordshire, May 12, 1928. I found about seven bushes growing wild on the common near the entrance to Ashridge Park, whence presumably this plant was originally bird-sown. One bush appeared much older than the others and may be the parent of the other six.—J. A. WILLIAMS.

Sambucus Ebulus L. Near East Harting, Sussex, August 4, 1928. A long hedgerow and a very beautiful sight.—W. BIDDISCOMBE.

Sambucus Ebulus L. Near Stevenage, Herts, July 1928.—I. HELSBY.

Rubia peregrina L. Dry, bushy and rocky places, Beaupora, Jersey, July 21, 1928.—L. ARSENE. "This interesting, broad-leaved, almost orbicular form looks different from the normal British plant and agrees well with Rouy's description of his var. *Bocconi* in Fl. Fr. viii., 2, 1903." —C. E. SALMON. "Is not this var. *Bocconi* Rouy (*R. Bocconi* Petagna)? I gathered a similar form at St Ives, Cornwall, some years ago."—DRABBLE.

Sherardia arvensis L. Among long grass on Railway Bank, the Goods Station, Dyserth, Flintshire, June 2, 1928.—C. WATERFALL.

Valerianella carinata Lois. Garden weed, Huntley, Bishop's Teignton, South Devon, June 11, 1928.—C. WATERFALL. "Yes; this is *V. carinata* Loiseleur not L. The boat-shaped cavity between, but outside, the two barren cells is very peculiar. The carina or keel is also there, on the back of the fertile cell, but it is not strong."—FRASER.

Erigeron acre L. Railway Banks, Cinderhill, Nottingham, September 6, 1928.—R. BULLEY.

Inula crithmoides L. Maritime rocks, Gros-Nez, Jersey, August 1, 1928.—L. ARSENE. "I agree with the name. Well dried specimens of this fleshy-leaved Composite. It seems confined to maritime rocks in the west of Britain, from Wigton to south-west Wales and Cornwall. I have gathered it on maritime rocks in Glamorgan."—FRASER.

Pulicaria vulgaris Gaertn. [Ref. No. Z.54.] In plenty, West End, Esher, Surrey, August 19, 1928.—J. E. LOUSLEY.

Diotis maritima L. Abundant on the seashore in the "Landes," near the mouth of the River Adour, 4 miles west of Bayonne, S.W. France, July 29, 1927.—C. V. B. MARQUAND. "Cassini is the authority for the species in the genus *Diotis*."—DRUCE.

Anthemis Cotula L. [Ref. No. 4125.] Manure heap near a wooden poultry house, west side of the Lorns, Stromness, Mainland, Orkney, alt. 200 ft., October 24, 1928. Not native. One plant in full flower only seen by me. Fresh leaves and flowers with a disagreeable odour, especially when crushed. Corolla of ray florets with a white limb and pale yellow tubes, with style rudimentary; of disk florets yellow and 5-lobed at the apex, style and its two recurved branches yellow; receptacle conical, clothed with linear-subulate acute scales. Also [Ref. No. 4126] from artificial grassy pasture near a stone poultry house, Ness, Stromness, Mainland, Orkney, October 24, 1928. Only three plants seen.—H. H. Johnston.

Chrysanthemum Leucanthemum L., form or var. Off grass covered stump in garden, Brookfield, Bovey Tracey, South Devon, July 9, 1928. —C. Waterfall.

Artemisia. On made ground, Bishop Road, Redland, Bristol, October 14, 1928. Closely allied to *A. vulgaris*, but six feet high, candelabriform. A striking plant.—J. W. White.

Senecio erraticus Bert., var. *intermedia* Dr. Shefford, Berks, August 1927. I hesitate whether to put this intermediate as a variety of *erraticus* or *aquaticus*.—G. C. Druce. "Has the few small bracts of the outer series of the capitulum, but the branches are fewer than in the type, and the leaves, so far as they are shown, have a smaller terminal lobe than the type, and these seem to me the features of the variety."—Fraser.

Senecio squalidus L., var. *subinteger* Dr. Oxford, June 1928. This originally came up as a mutant in my garden to which a solitary example of type *squalidus* had been brought the year before. The plant rapidly spread and among the progeny this form reproduces itself.—G. C. Druce. "An addition to the forms of this polymorphic species, which is for ever varying in the amount of division of the leaves. I have some seedlings showing similar leaves to this but no adult specimens, though they are very varied in width and fission."—Fraser.

Senecio viscosus L. (Achenes). Waste, near Gas Works, Hitchin, Herts, September 3, 1928.—J. E. Little.

Senecio viscosus L. Railway sidings, Netherfield, Notts, August 31, 1928.—R. Bulley.

Senecio Cineraria DC. Stony hillside facing sea, near Daddy Hole Plain, Torquay, South Devon, June 29, 1928.—C. Waterfall.

Senecio integrifolius Clairv. = *campestris* DC. Pepper Box Hill, near Salisbury, May 1928.—W. Biddiscombe.

Centaurea Drucei C.E.B. [Ref. No. 3414.] Headley, Surrey, August 25, 1928. Characteristic specimens and frequent at Headley, Surrey.—C. E. Britton.

Centaurea nemoralis Jordan (fide Charles Edward Britton, who saw this specimen on November 20, 1928). [Ref. No. 4130.] Artificial grass field, eight years in grass, 370 ft. alt., Geo, Firth, Mainland, Orkney. Not native. A weed of cultivated land. Rare. Sixteen plants, in withered flower (no fruit developed) and sparingly in flower, only seen by me. Corolla purple. Style and its two divergent branches pale purple. This alien species was found by John Sinclair, residing at Moan, Firth, Mainland, November 2, 1928.—H. H. Johnston.

Crepis paludosus Moench. [Ref. No. Z.3.] Meadow above High Force, Durham, July 15, 1927.—J. E. Lousley.

Hieracium Pilosella L. [Ref. No. FF.54.] Upton, Berks, June 1928. Dr Zahn has identified this. It is 419/1 f. of my List = *subvirescens* (N.P.) and a N.C.R.—G. C. Druce.

Hieracium pratense. Old Garden, Nottingham, July 4, 1928.—R. Bulley. "See 119/5. *H. colliniforme* N. & P. of my *List*."—Druce.

Hieracium rubicundiforme Zahn. Ex Clova, H.O., August 1927.—G. C. Druce.

Hieracium pellucidum Laest., teste Zahn. [Ref. No. FF.58.] Upton railway, Berks, June 1928. I thought it would be well to have authenticated examples named by Dr Zahn. The seeds came to this place by wind after the Chalk cutting had been made about 4 years. They have now much increased.—G. C. Druce.

Hieracium stenolepis Lindeb. Limestone cliffs, Craig-y-cilau, Breconshire, June 10, 1926.—A. E. Wade and H. A. Hyde; comm. National Museum of Wales.

Hieracium surrejanum Hanb. Witley, Surrey, July 1928. Probably some of these come under the var. *megalodon* Linton, but the line of demarcation is not clear.—G. C. Druce.

Hieracium pulmonarioides Vill. Nottingham Castle, August 28, 1928.—R. Bulley.

Hieracium umbellatum (L.) Zahn. Border of Park Wood, near Devauden, Monmouth, August 9, 1917.—W. A. Shoolbred; comm. National Museum of Wales.

Taraxacum aequatum Dahlst., nova sp. Harwell, Berks; Shipton, Oxon, May 1928.—G. C. Druce.

Taraxacum caphocentrum Dahlst., nova sp. Didcot, Berks, May 1928.—G. C. Druce.

Sonchus oleraceus L., var. *triangularis* Wallr. Leaves runcinate-pinnatifid with a large, triangular, terminal lobe, the lateral sub-lanceolate. Markham Farm, near Portbury, N. Somerset, November 14, 1928.—J. W. WHITE. "I have no description of this, though it is evidently correct. The terminal lobe of the cauline leaves is triangular-hastate and often truncate at the base, though this is not constantly so. One leaf is lanceolate, repand-dentate, without a terminal lobe. It is a polymorphic species, and is reputed to hybridise with *S. asper*."—FRASER. "By no means an extreme form, and hardly typical."—DRUCE.

Gaultheria Shallon Pursh. Naturalised on moor near Bumper Castle, Derbyshire, September 1928. This is spreading fast here, but it owes its origin to a former nursery where many Ericaceae are grown.—G. C. DRUCE.

Calluna vulgaris Hull, f. *pubescens* Huds. Moorland, The Bickerton Hills, Cheshire, September 5, 1928.—C. WATERFALL.

Rhododendron ponticum L. Seedlings on heathy moor above Matlock, Derbyshire, September 1928.—G. C. DRUCE.

Gentiana lingulata Ag., var. *praecox* Towns. [Ref. No. 29.] Bonchurch Down, near Ventnor, Isle of Wight, May 9, 1925.—P. M. HALL.

Polemonium caeruleum L. Mulham Cove, West Yorks, July 26, 1928.—W. A. SLEDGE.

Symphytum peregrinum Ledeb. Humberstone, Leicester, July 1916. —A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES.

Anchusa officinalis L. Waste ground, Cowes, September 1928.—J. W. LONG.

Pulmonaria angustifolia. Near Brading, Isle of Wight, April 8, 1928.—I. HELSBY.

Myosotis palustris Hill. [Ref. No. 3409.] Waltham Abbey, N. Essex, July 18, 1928. A small-flowered form with corolla about 5 mm. in diameter, and with stems and leaves with appressed hairs. Would perhaps be named var. *strigulosa* (Reichb.).—C. E. BRITTON.

Myosotis collina Hoffm., forma. Cothill, Berks. May 1928.—G. C. DRUCE.

Echium arenarium Guss. Barry Docks, Glamorgan, August 1928. Plant completely prostrate, sending out in all directions stems covered with a profusion of flowers from early May until late October. This species was first noticed by the writer in July 1927 when it was growing in company with one or two plants each of *Polycarpon tetraphyllum* L., *Trifolium arvense* L., *Ornithopus compressus* L., *O. pinnatus* (Mill.)

Dr., *Caucalis latifolia* L., *Gnaphalium luteo-album* L., *Anthemis mixta* L., *Galactites Galactites* (L.) Dr., *Tolpis barbata* Gaertn., *Antirrhinum Orontium* L., *Corrigiola littoralis* L. and *Rumex bucephalophorus* L. The *Echium* was the only plant of the thirteen that appeared a second year.—R. L. SMITH.

Sibthorpia europea L. Wet and shady places, hedges and damp banks among moss and springs, St Brelade's, Jersey, July 21, 1928.—L. ARSENE. "A rare plant in Britain, correctly named. It likes a shady, moist place in which to grow. It is confined to the west of England, from S. Wales to Cornwall, from which latter county I have it. The rainfall is much greater in the western than in the eastern counties; but it has established itself spontaneously on a lawn at Kew where the subsoil is sand. The garden is slightly sunk, and it also has the shade of trees to some extent."—FRASER.

Veronica Beccabunga L., forma. Menmarsh, Oxon, June 1928. A pretty form very near to, but with somewhat broader leaves than, the var. *elegans*.—G. C. DRUCE. "This seems to me to be quite ordinary *Beccabunga*."—DRABBLE.

Veronica Tournefortii Gmel., forma. [Ref. No. CC.13.] Harwell, Berks, July 1928. These have the aspect and corolla of var. *Correnşiana* (teste C. E. Britton) but lack the secondary serration of the leaves. Similar plants were found near Penley Wood, Bucks.—G. C. DRUCE. "This plant is intermediate between the two extremes commonly found in this country, viz., the luxuriant dark green plant with crowded leaves and deeply-coloured flowers, and the slender paler plant with pale flowers and with small leaves separated by long internodes. Both these forms are possibly produced in response to soil conditions. In our plants slender habit and small leaves seem very rarely to be correlated with crowded growth (*i.e.*, short internodes) as shown in some continental specimens."—F. RILSTONE.

Veronica persica Poir., var. *Correnşiana* (Lehm.). [Ref. No. 3462.] Ashtead, Surrey, October 14, 1928. An account of this var. appeared in *Journ. Bot.*, 42, 1928. The examples distributed are quite characteristic and show the deeply incised leaves, with secondary dentition, and the broad sepals which are not more than subacute. The corolla of the living plants was of a uniform deep blue colour and all segments were equally strongly veined.—C. E. BRITTON.

Veronica persica Poir. [Ref. No. 3283.] Walton-on-the-Hill, Surrey, October 2, 1927. This is a form with deeply incised leaves with serratures mostly simple, acute sepals, and corolla blue with the lower segment much paler or even whitish. It is not an uncommon form and cannot be referred to either var. *Aschersoniana* (E. Lehm.) or var. *Correnşiana* (E. Lehm.).—C. E. BRITTON. "Dr Thellung gave good reasons for using the older name *Tournefortii*."—DRUCE.

Veronica agrestis L., var. *Garckiana* Fournier. [Ref. No. 3458.] New Malden, Surrey, October 6, 1928. The name of this var. is correctly that given here, and not *Garkiana* as mis-printed in *Journ. Bot.*, 43, 1928. This is the common form of the species with the capsules, as described by Garcke (*Ill. Fl. v. Deutschl.*), glandular-ciliate at the margin and with scattered glandular hairs on the sides (or glabrescent below). Var. *Boreana* is the plant described by Boreau, and has the capsule clothed with crisp eglandular hairs mixed with straight glandular hairs and is much rarer.—C. E. Britton.

Veronica polita Fr., var. *Thellungiana* Lehm. [Ref. No. 3281.] Walton-on-the-Hill, Surrey, October 2, 1927. The usual autumnal growth.—C. E. Britton.

Veronica polita Fr., var. *Thellungiana* (Lehm.). [Ref. No. 3152.] Ashtead, Surrey, June 19, 1927. Small specimens characteristic of the spring state of this species.—C. E. Britton.

Euphrasia brevipila Burn. et Gremli. [Ref. No. 3380.] Towyn, Merioneth, July 23, 1928.—C. E. Britton. " Small-flowered *E. brevipila* with several interesting characters. The foliage is much lighter green than is usual and possesses a very abundant supply of unusually stout glandular hairs."—Pearsall. " Yes; *brevipila*."—Drabble.

Euphrasia occidentalis Wettst. [Ref. No. Z.25.] Knocke-sur-mer, Belgium, July 13, 1928.—J. E. Lousley. " These specimens are practically eglandular but extremely setose on the leaf-margins. Wettstein considered *E. occidentalis* to be very near *E. curta* in habit, size and form of flowers, and in general hairiness. These plants suggest the latter species but are, I think, correctly named."—Pearsall. " Yes; *occidentalis*, but the specimens I have seen are entirely without stalked glands. The sessile glands usually present in all the hemiparasitic Scrophulariaceae, are well developed."—Drabble.

Euphrasia gracilis Fr., fide W. H. Pearsall. Colin Top, near Belfast, Co. Antrim, August 29, 1928.—I. M. Roper. " Typical examples of *E. gracilis*."—Pearsall. " Yes; *gracilis*."—Drabble.

Euphrasia gracilis Fr. [Ref. No. 3383.] Abergynolwyn, Merioneth, July 24, 1928.—C. E. Britton. " *E. gracilis*, but very young. The few fruits are immature and the spike not fully developed."—Pearsall. " Probably young and very small *gracilis*. The habit and the toothing of the stem-leaves resemble *scotica* but the floral characters seem to indicate *gracilis*."—Drabble.

Euphrasia Rostkoviana Hayne. Field near Rolven, Carnarvonshire, September 1928.—A. Wilson. " Typical *E. Rostkoviana*, with some of the longest and most flexuous glandular hairs I've yet seen. The flowers are smaller and paler in colour than usual."—Pearsall. " Yes; *Rostkoviana*."—Drabble.

Verbena officinalis L. Waste ground, opposite Bovey Potterne, South Devon, July 2, 1928.—C. WATERFALL.

Mentha longifolia Huds., var. *pulverulenta* Strail. [Ref. No. Z.104.] Agreed to by Mr Fraser. On common land near Tadworth Station, Surrey, September 2, 1928.—J. E. LOUSLEY. "The only alteration I would make is to write it *longifolia* Huds., var. *pulverulenta* (Strail). The latter described it as a species. The feature of it is the mealy pubescence. Some sheets of it have passed through my hands previously but they were all collected in Kent by the late E. S. Marshall. This is a new record."—FRASER.

Mentha piperita L. Cookridge, Yorks, September 26, 1928.—W. A. SLEDGE.

Mentha piperita L., var. *subcordata* Fraser. One lot from Friday Street, Surrey, August 28, 1927; another lot, cultivated at Kew, from Friday Street, Surrey, September 3, 1928. Unfortunately those gathered at Friday Street were not in bloom and I was unable to get there later in the season. The specimens do not show the subcordate base of the leaf so well as the cultivated ones, but there were plenty of plants at Friday Street that did so though they were less advanced than those I gathered.—J. FRASER.

Mentha aquatica × *arvensis*. Lane near Upper Diddlesfold, Lurgershall, W. Sussex, September 1, 1928.—R. J. BURDON. "A very untypical state of ×*M. verticillata* L., var. *paludosa* Sole. Typically it is one of the most hairy varieties of the hybrid. Sole, *Menth. Brit.*, t. 22, shows a subspicate form which I regard as the best form of the plant. It is very inconstant in this respect whether wild or cultivated, and even in the same spot in different years, according to the rainfall. The verticels may number 1-3 in very dry seasons in the open, or they may number 7-10 without being subspicate, or the main axis may terminate in a pair of leafy bracts, but when the stems are interlaced with a hedge there may be 1-5 pairs of leafy bracts. The leaves are always elliptic, rarely lanceolate-elliptic and roundly obtuse to subacute. In water, in hedges, or when cultivated, the plant loses a considerable amount of its hairiness. The calyx teeth, from a broad triangular base, suddenly narrow to a slender point."—FRASER.

Mentha rubra Huds. [Ref. No. 1778.] Roadside, Alphamstone, N. Essex, August 26, 1928. In great quantity and established for many years. Named in 1921 by Dr Thellung, but Dr Druce says *in litt.*, June 31, 1921, "I hesitate here." Odour perhaps rather more pleasant than ordinary *rubra*.—G. C. BROWN. "It is ×*M. rubra* Sm., var. *raripila* Briq. The stems, leaves and bracts are more or less hairy or thinly pilose, as the varietal name indicates. Hudson's description of his *M. rubra* says the stems are diffuse (caulibus diffusis), so that I feel on safer grounds with Smith's description."—FRASER.

Mentha arvensis L., var. Chalky field, Henley, Oxon, September 1928.—G. C. Druce. "Yes; the form I call *M. arvensis* L., f. *hirtipes* Fraser. The type of Linnaeus has glabrous pedicels to the flowers."—Fraser.

Mentha arvensis L., var. *densifoliata* Briq., teste J. Fraser. [Ref. No. Z.100.] Barrons Pond, Epsom, Surrey, September 15, 1928.—J. E. Lousley. "I agree. The variety varies greatly according to environment. In the open, or amongst thin corn, it branches freely, with shorter internodes. The broadly ovate leaves, broadest near the base, with 7-11 serratures or crenatures on each margin, are the main features."—Fraser.

Mentha arvensis L., f. *angustifolia* Fraser, teste J. Fraser. [Ref. No. Z.103.] By Cutt Millpond, Puttenham, Surrey, August 26, 1928. —J. E. Lousley. "I agree. I have gathered a narrower-leaved wild plant, and after 4-5 years of cultivation the leaves got considerably broader but retained the tapering outline at both ends."—Fraser.

Mentha arvensis L., var. *agrestis* (Sole) = *M. arvensis* L., var. *Scribae* Briq. Oatfield, Cambridge Batch, Bristol, N. Somerset, August 2, 1928.—I. M. Roper. "A little less hairy than usual, but otherwise quite typical. The very broad, almost orbicular leaves and short petioles are characteristic of the variety. The plaiting or rugosity of the fresh leaves is lost in drying."—Fraser.

Thymus britannicus Ronniger. Rock face by road, Kellow, Polperro, E. Cornwall, July 28, 1928.—F. Rilstone.

Thymus britannicus Ronniger. Cliff slopes, Polperro, E. Cornwall, July 29, 1928. By Dr Ronniger's Key both these gatherings of plants with goniotrichous flowering shoots and hirsute leaves run down to *T. britannicus*, but the Kellow plant is much the more hairy.—F. Rilstone.

Calamintha sylvatica Bromf. Hedgerow, Apes Down, Isle of Wight, August 1928.—J. W. Long. "Correctly named. I am pleased Mr Long did not name it *C. grandiflora* Moench, a beautiful old garden plant. I see that Coste, *Fl. de France* iii., 96, names it *C. officinalis* Moench (*C. silvatica* Bromf.). Surely it is time these names should be stabilised."—Fraser.

Satureia ? villosa (Boiss.) Dr. (*Calamintha baetica* Pugsl.). Corfe Castle, Dorset, September 1928.—G. C. Druce. "The specimens agree with others from Corfe Castle named *Calamintha baetica* Pugsl. The calyx measures 6.5-8 mm. to the tip of the longest teeth. Specimens I have seen named *C. baetica* Boiss. & Reut. from Spain and Portugal in Herb. Kew have a shorter calyx, measuring 5.5-6.5 mm. These continental specimens are often much more hairy than Dorset ones, more so than those I have named *C. ascendens* Jord., var. *Briggsii* Syme. The hairs on the calyx teeth of the last named are much longer than in *C. baetica*, however."—FRASER.

Nepeta hederacea Trev., var. *parviflora* Benth. Slopes above cliffs, Polperro, E. Cornwall, June 11, 1928.—F. RILSTONE. "Benth. needs to be bracketted."—DRUCE.

Nepeta hederacea (L.) Trev., var. *parviflora* (Benth.). Wood Wraxall, N. Somerset, May 2, 1928. Corolla tube hardly longer than calyx, stigma developed, but stamens very short and abortive.—I. M. ROPER.

Galeopsis bifida Boenn. [Ref. No. 3410.] Burgh Heath, Surrey, August 19, 1928. To give specific rank to this form is but to follow the practice of many modern European botanists (Lindman, Hermann, Vollmann, Gremli, etc.). In addition to the characters afforded by the more elongated mid-lobe of lower lip, deeply emarginate, and with recurved margins, there is a decided difference in the colour of the corolla of this form as compared with *G. Tetrahit*, the lower lip being much deeper coloured in comparison to the rest of the corolla. Other differences are to be found in the nutlets, which are smaller and narrower than in *G. Tetrahit*. The fact that barren plants have been noted intermediate in characters between *G. Tetrahit* and *G. bifida* seems to favour the view that the latter is a good species.—C. E. BRITTON.

Galeopsis Ladanum L., aggr., sub-sp. *angustifolia* (Ehrh.) Gaud. See *Rep. B.E.C.*, 276, 1912, and *Wats. Rep.*, 454, 1913. L.N.E. Railway near Wilbury Hill, Hitchin, Herts, September 19, 1928.—J. E. LITTLE.

Lamium hybridum Vill. (Entomophilous state). Great Wymondley, Herts, June 2, 1928.—J. E. LITTLE.

Lamium hybridum Vill. Hitchin, Herts, February and March, 1928. This cleistogamic state lasts from November to March, but in the latter month a few short-tubed flowers may be found with the hood opened.—J. E. LITTLE.

Lamium hybridum Vill. (at the end of the cleistogamic state; an odd flower with galera lifted). Allotment, Hitchin Hill, Hitchin, Herts, February 27, 1928. Tube of corolla <3 mm., contracted above the base.—J. E. LITTLE.

Lamium hybridum Vill. Cotton's Market Garden, Wymondley Road, Hitchin, Herts, March 1, 1928. End of the cleistogamic state. Flowers still short-tubed; but a few with lifted hoods.—J. E. LITTLE.

Lamium Galeobdolon Crantz. Woods, Mont-y-Frith, Flintshire, May 1928.—C. WATERFALL.

Plantago Coronopus L., forma *glabrescens* Druce. [Ref. No. 2425.] Waste ground by maltings, Hythe Quay, Colchester, N. Essex, September 27, 1928. Has persisted since 1925, *cf.* Ryde, *Rep. B.E.C.*, 779, 1925. Dr Druce says "conspicuous from its bright green, succulent, glabrescent foliage."—G. C. BROWN.

Herniaria ciliata Bab., var. *angustifolia* Pugsley. St Brelade's Bay, Jersey, July 10. 1928. The plants agree better with the description of *H. ciliata* Bab., var. *subciliata* (Bab.) Moss of the Cambridge Flora (which is there regarded as synonymous with var. *angustifolia* Pugs.) than with Mr Pugsley's original description in *Journ. Bot.*, 331, 1914; the more crowded inflorescence, approaching *H. glabra* L., being a distinctive character. The plant is recorded from this locality as *H. glabra* L., in Lester-Garland's *Flora of Jersey*.—W. A. SLEDGE.

Chenopodium opulifolium Schrader. Waste heap, Bethel Lane, Hitchin, Herts, November and December 1927. A character noted in Bab. *Manual*, ed. ix., 1904, by Messrs Groves, viz., "leaves with usually slightly mucronate teeth," is observable in these plants. Ten seeds, arranged in a contiguous row, measure 11.87 mm., giving an average of 1.18 mm. Coste (*Fl. Fr.*) gives 1.25 mm. He describes them as "ternes;" to me they appear somewhat shining and finely punctulate, as in *C. album*. Like the latter they have a rather prominent radicle so that the horizontal outline is irregular. Ascherson and Graebner describe the edge as "stumpf-randig," but the difference between this and "ziemlich scharf" for *C. album* is only slight. Dr E. Drabble (*in litt.*, November 15, 1928) writes: "Much of our English *Chenopodium opulifolium* seems to be var. *mucronulatum* G. Beck." Within the limits of my observation *C. opulifolium* is very late in flower and fruit.—J. E. LITTLE. "Yes; beautiful material. My sheet is var. *mucronulatum* G. Beck."—DRABBLE.

Chenopodium album L., var. *lanceolatiforme* (Murr). Didcot, Berks, September 1928.—G. C. DRUCE.

Chenopodium album L., sub-sp. *lanceolatiforme* Murr. On waste ground by the Docks, Avonmouth, West Gloucester, October 1928. Derived perhaps from East Asia.—J. W. WHITE.

Chenopodium album L., var. *leptophyllum* Moquin. Waste ground near Gas Works, Hitchin, Herts, October 13 and November 13, 1928. Dr Moss did not allow this as a species, yet in habit it is distinct from *C. album*. The edge of the seed is similarly narrowed, neither very obtuse nor definitely sharp. An average of 10 seeds gives 1.12 mm. diameter. The surface is somewhat shining and obscurely punctulate. The radicle is prominent and *C. album*, *C. opulifolium* and *C. leptophyllum* may thereby be distinguished from *C. ficifolium*, in which the horizontal outline is suborbicular and the edge obtuse.—J. E. LITTLE. "The experts, Dr Aellen and Dr J. Murr, give it (as is its due) specific rank."—DRUCE.

Chenopodium album L., sub-sp. *viridescens* St Amans. In a cultivation at Frenchay, West Gloucester, October 19, 1928.—J. W. WHITE.

Chenopodium album L., var. [Ref. No. Z.34.] Waste ground, Mitcham, Surrey, August 25, 1928.—J. E. LOUSLEY. "For critical determination such specimens as *Chenopodium album* (leafless) are useless; so, too, are the rootless examples of *Poa nemoralis, Parnellii* and *Festuca* of Mr Lousley's gatherings."—DRUCE.

Chenopodium leptophyllum Moq. On made ground, Avonmouth Docks, West Gloucester, October 21, 1928.—J. W. WHITE. "Yes, but should it not be quoted as *C. leptophyllum* Nutt. (Britton & Brown)? Moquin-Tandon (1849) treated this plant as a variety of *album*."—DRABBLE.

Chenopodium ficifolium L. Farmyard, Clapton Court, September 26, 1928.—J. W. WHITE. "Correctly named. The three-lobed leaves of my specimens are few, but the spreading lateral lobes have the usual tooth on the lower side. The perianth segments are keeled and mealy. The achene is horizontal, dull blackish and punctate, with a thick obtuse edge."—FRASER. "Smith, not L., is the authority for the species."—DRUCE.

Chenopodium hircinum Schrad. On made ground, Avonmouth Docks, West Gloucester, October 21, 1928.—J. W. WHITE.

Atriplex Halimus L. Planted for hedges, but naturalised on the coast, Westmount, Jersey, September 10, 1928.—L. ARSENE.

Atriplex portulacoides L. Westmount, Jersey, September 10, 1928. Muddy or rocky sea-shores. In the *Flora of Jersey* it is said to be extinct, but it is found, as far as I know, in seven or eight different localities, especially at the base of cliffs. It is very abundant at Rouge Nez.—L. ARSENE.

Salicornia dolichostachya Moss. [Ref. No. 2424.] Sandy mud, Beacon Hill, St Osyth, N. Essex, August 6, 1928. This seems to be identical with my No. 2158 from the same spot, teste W. C. Barton. Rather young, perhaps, but floral characters appear to be right.—G. C. BROWN. "My specimen is quite unlike *dolichostachya*. The habit is wrong and the terminal spikes are too short and slender and the central flower does not separate the lateral ones. It seems to be a form of *S. europaea* L." —DRABBLE.

Salicornia sp. [Ref. No. Z.37.] Pagham Harbour, West Sussex, August 5, 1928.—J. E. LOUSLEY. "*S. radicans* Sm. or *lignosa* Woods —the former, I think, though my scraps show no rooting at the nodes. The material is quite inadequate."—DRABBLE.

Salsola —— ? Considerable quantity on a rubbish heap by the Thames, near Grays, Essex, October 13, 1928. The plants were very bushy, often reddish in colour when fresh, and about 9 to 18 inches high. —J. A. WILLIAMS.

Polygonum Convolvulus L., var. *subalatum* Lej. & Court. Waste ground, Redland, Bristol, W. Gloster, July 25, 1928.—I. M. ROPER. "Yes; this is var. *subalatum* Lej. & Court. In my experience this is by far the commoner form of *P. Convolvulus*."—DRABBLE. "Correctly named. The three outer sepals are rough on the back, and broadly winged. The nutlets are dull black (not polished) and finely granular." —FRASER.

Polygonum Persicaria L., var. *elatum* G. & G. [Ref. No. 3408.] Near Fishers Green, N. Essex, August 18, 1928.—C. E. BRITTON. "Is not this var. *agreste* Meisner?"—LITTLE.

Polygonum petecticale (Stokes) Dr. [Ref. No. 615/8.] Ware, Herts, September 1928. As much confusion appears to be present regarding this plant, a series of it in good condition is sent, including both forms, *densum* and *gracile*. The synonyms include *P. nodosum* Pers. and *P. maculatum* T. & D.—G. C. DRUCE.

Polygonum heterophyllum Lindman. Railway siding, Whissendine, Rutland, August 4, 1916, A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES.

Polygonum rurivagum Jord. [Ref. No. Z.22.] Wheat stubble, Farley, Surrey, September 25, 1928. I never find this variety except among growing crops, where it would naturally tend to attain the elongated form it exhibits.—J. E. LOUSLEY.

Polygonum heterophyllum Lindman. [Ref. No. Z.28.] Eastfields, Mitcham, Surrey, October 15, 1928.—J. E. LOUSLEY.

Polygonum heterophyllum Lindman. [Ref. No. Z.29.] Westcott, Dorking, Surrey, October 16, 1927. Very typical. A fine large plant characteristic of the neglected borders of arable land.—J. E. LOUSLEY.

Polygonum patulum M. Bieb. Burton-on-Trent, Staffs, July 1928. This represents the plants formerly called *Bellardi*, which these are not. I have not been able to compare these with Bieberstein's plant, but I hope they are correctly named. Dr Danser confirms the name.—G. C. DRUCE.

Polygonum cognatum Meisn., var. *alpestre* (C. A. Mey). [Ref. No. 2268.] Waste ground by maltings, Hythe Quay, Colchester, N. Essex, July 22, 1928. A further supply of better material to supplement that sent in 1926. Named by Dr Thellung in *Rep. B.E.C.*, 275, 1926. Also see *Rep. B.E.C.*, 1062, 1925.—G. C. BROWN. "The above plant was recorded in *Journ. Bot.*, 338, 1872, as a casual on the Westerley Ware, Kew. It existed there till 1923 as the last form of vegetation after everything else had been destroyed by the game of football. The making of hard tennis courts exterminated it. The leaves of this plant were much shorter and narrower than those collected by Mr Brown; otherwise they were the same."—FRASER.

Rumex Hydrolapatheum Huds. [Ref. No. Z.35.] Cutt Millpond, Puttenham, Surrey, August 26, 1928. With the petioles channelled above, with raised edges and other characters of *R. heterophyllus* Sch. in the last edition of Babington. On what records do the 15 vice-counties of *R. maximus* Schreb. in the 11th edition of the *London Catalogue* rest, and should the species be entered there at all? I should be most interested to see plants genuinely referable to this species.—J. E. LOUSLEY. "The characteristic lower leaves are absent. It is hardly worth while to offer an opinion based on imperfect *Rumex* material, but it may be mentioned that I am quite familiar with *R. maximus* Schreber and have not found the differences in petiole-character between that plant and *Hydrolapatheum* that one might expect from the description in Bab. *Man.*, eds. 9 and 10."—DRABBLE. "In answer to the query may I say that there is no satisfactory evidence of the occurrence of *Rumex maximus* in Britain. The plant has received several names, including *latifolius* Borrer, but all the British plants I have seen can be referred to the hybrid, *R. Hydrolapatheum* × *obtusifolius* = *R. Weberi* F.-B."—DRUCE.

Rumex maritimus L. Wollaton Park Lake, Nottingham, September 13, 1928.—R. BULLEY.

Rumex Patientia L. Adventive on city refuse, Cranbrook Road, Bristol, June 1928. Nyman states that this fine Dock, although found in many European countries, is not native in any one of them, but in all probability was derived from Central Asia for cultivation as a culinary herb.—J. W. WHITE. "Correctly named. There should be a tubercle on one of the fruiting perianth segments, but the inflorescence is too young to show it. The species was at one time cultivated in this country under the name of Herb Patience. It is really native in Eastern Europe."—FRASER.

Euphorbia portlandica L. Sand dunes, Dawlish Warren, South Devon, June 25, 1928.—C. WATERFALL.

Euphorbia exigua L. Garden weed, Brookfield, Bovey Tracey, South Devon, July 3, 1928.—C. WATERFALL.

Euphorbia Peplis L. Crabbie Bay, Jersey, July 17, 1928. Still plentiful in this locality, whence the last specimens of this species to be distributed through the Club were sent by Mr Charles Bailey in 1903.—W. A. SLEDGE.

Ulmus nitens Moench. [Ref. No. 742.] Wallington Park, W. Norfolk, September 23, 1927.—J. E. LITTLE. "This appears to be a form of *U. nitens* with more coarsely toothed leaves than usual. Without seeing the tree from which the specimens were taken it is not possible to say if this is what Dr Moss means by the var. *Sowerbyi*, and the figure, No. 2248, quoted in *English Botany* as that variety, I should regard as typical *Ulmus nitens*."—A. B. JACKSON. "This name is antedated by *Ulmus carpinifolius* Borck."—DRUCE.

Betula alba L. Tree in field adjoining Rushford Wood, Rushford Barton, South Devon, June 18, 1928.—C. WATERFALL.

Carpinus Betulus L. Mawsley Wood, Northants, September 1928.—G. C. DRUCE.

Salix alba L., var. *vitellina* (L.) ♂ [Ref. No. S.742.] Planted, left bank of River Hiz, Hitchin, Herts, April 20 and July 19, 1928. Branches diverging at a much wider angle than in typical *S. alba*. On the young enrolled leaf are scattered appressed hairs. In this stage the marginal glands, as yet yellow, are active, and glandular dots (the result of exudation from these glands?), are found scattered over the leaf. The light green leaves are almost immediately glabrescent and covered with varnish from the glands. Stipules minute and glandular. Petioles half-round, channelled, hairy on the edge of the channel. Young leaves, especially at the tips, ciliate. The flowers in this plant are, I believe, uniformly diandrous, but in a tree, otherwise similar, distributed to the B.E.C. (*Report*, 404, 1923) a proportion of the flowers had 3 or 4 stamens.—J. E. LITTLE. "I agree. It is an exceptionally glabrous form. Most of the bushes that are stooled or trees that have recently been cut down are subglabrous. Old trees may be subglabrous, thinly hairy, or quite silky. The ♂ is very rare in Surrey, Middlesex, and apparently elsewhere."—FRASER.

Salix triandra L. Horsell Common, near Woking, Surrey, May and September 1928.—W. BIDDISCOMBE. "Correct. Elliptic-lanceolate, closely serrate leaves, tapering to both ends, and more or less glaucous beneath, are the main features of the type."—FRASER.

Salix purpurea L., f. *Helix* (Sm.). Fieldcommon Farm, West Molesey, Surrey, catkins March 18; leaves September 16, 1928. It is impossible to say what was *Salix Helix* L. His description is "Salix foliis serratis glabris lanceolato-linearibus, superioribus oppositis obliquis." In Britain, the leaves are the least serrate of all the forms of *S. purpurea*; indeed, many of the leaves may be entire, and the others obscurely dentate at the widest part. I therefore adopt Smith's descriptions, and his plate in *English Botany*, ed. 1, t. 1343; and ed. 2, t. 1331. Only the male twig and the leafy twig belong to the form *Helix*. The female catkins and the enlarged ovary on the same plates belong to *S. rubra* Huds., f. *Forbyana* (Sm.).—J. FRASER.

Salix cinerea L., f. *oleifolia* (Sm.). Ref. No. 92, as it precedes the name on the labels. The first bush of this form which I found; hence the low reference number. Runny Mede, Surrey, catkins March 21; leaves September 16, 1928. The venation is always dense in this form, and conspicuous in open situations.—J. **Fraser.**

Salix repens L., f. *argentea* (Sm.). Rosehearty, North Aberdeen, catkins May 16; leaves August 15, 1928. The above is a maritime form of the species collected by A. P. Fraser, a relative of mine, from an isolated and uniform colony which I marked on September 20, 1927, when collecting there. The forms *incubacea* (L.) and *fusca* (L.) also grow there. The former is mostly maritime, the latter mostly inland.—J. Fraser.

Populus tremula L. [Ref. No. 734.] (See *Rep. B.E.C.*, 286, 1912.) Little Wymondley, Herts, February 21, and September 18, 1928, coll. S. Simmons. Specimens from this tree were sent to Miss B. Corfe, Winchester, for a postcard drawing in the South Kensington Natural History Series.—J. E. Little. "A wonderfully glabrous form of the species which might well be regarded as typical. Presumably the catkins were a little older before they were sketched as the anthers were hidden beneath the silky hairs in my specimens."—Fraser.

Populus tremula L. ♂ [Ref. No. 734.] (See *Rep. B.E.C.* 286. 1912.) Little Wymondley, Herts, February 21 and September 18, 1928, coll. S. Simmons. Specimens from this tree sent to Miss B. Corfe, Winchester, for a postcard drawing in the South Kensington Natural History series.—J. E. Little.

×*Populus canadensis* Moss. Fornham St Martins, W. Suffolk, April 16 and October 8, 1928.—R. W. Butcher and I. M. Roper.

Orchis maculata L. Menmarsh, Oxon, May 1928.—G. C. Druce.

Orchis Fuchsii Dr. Ampwell, S. Hants, June 1928. From a wet marsh, through which doubtless basic water flows, at Ampwell. See a paper by P. M. Hall in this *Report*. Some very luxuriant plants were present. The suggested hybrid, ×*O. transiens*, was also seen. The strong spots on the leaves mostly disappear in drying.—G. C. Druce.

Iris foetidissima L. Hedgebanks, etc., about Bishops Teignton, South Devon, June 1928.—C. Waterfall.

Crocus vernus (All.). Near Harleston, Norfolk, March 2, 1928.—I. Helsby. "I agree. Allioni's name should not be in brackets. Some authorities write the name *C. vernus* (L.) All., and others say *C. officinalis* Huds. (*vernus* All.). The three stigmas are dilated at the apex and shallowly fringed. The anthers are longer than their filaments and reach nearly to the top of the stigmas."—Fraser.

Sisyrinchium californicum Ait. Rosslare, Co. Wexford, August 1928. It seems to be spreading in the neighbourhood of Rosslare. Its introduction has yet to be explained.—G. C. Druce.

Asphodelus tenuifolius Cav. Splott, Cardiff, Glamorgan, September 1928. Solitary specimens of this species appear almost every year here, but last September I was fortunate enough to find a little colony of nearly forty plants, hence this gathering. A grain alien, most probably from Persia.—R. L. Smith.

Ornithogalum pyrenaicum L. Grashford, Somerset, June 14, 1928.—I. Helsby.

Juncus maritimus Lam. Aldeburgh, E. Suffolk, September 27, 1928.—Coll. K. D. Little; comm. J. E. Little. "I agree with the name, but the authority for it is Lamarck. The specimen I have received has well developed fruit. According to the description, all six perianth segments should be lanceolate acute, but in a flower here and there the inner three are obtuse with scarious margins. This may be accidental variation, but it is the first specimen in which I have noted it."—Fraser. "The earlier name is *Juncus spinosus* Forskal."—Druce.

Juncus articulatus L., forma. [Ref. No. 3398.] Aberdovey, Merioneth, July 25, 1928. A small form growing in hollows of the sand dunes. Var. *litoralis* Buchenau is a small plant found in damp places among dunes on the coast of Europe, and perhaps may be the same as the plant distributed.—C. E. Britton. "*J. articulatus* L., var. *littoralis* Patze—a frequent state on sand dunes."—I. M. Roper.

Sparganium angustifolium Michx. Rodil, S. Harris, July 1928. This is synonymous with *S. affine* Schniz. = *S. natans* L., p.p.—G. C. Druce.

Sparganium minimum Fr. Keenaghan, Co. Donegal, August 1928. These very slender plants are, I am afraid, too young for critical determination, but I have sent one to Denmark to see if it can be separated.—G. C. Druce.

Potamogeton Drucei Fryer. Child Okeford, Dorset, June and September 1928. It was a great delight to discover this handsome Pondweed in a new county last June. It grows in great masses in the Stour near Ould Okeford, Dorset. There seems to be no *alpinus* in the stream. In September it was fruiting freely and extends for some distance. It may well be that it is the plant which Pulteney (See *Fl. Dorset*) called *heterophyllus*. I was unable to see *gramineus* in any of its forms in the river.—G. C. Druce.

Potamogeton Griffithii A. Benn. Llyn Anafon, Carnarvonshire, altitude 1630 ft., August 4, 1928. Hearing that Llyn Anafon will shortly be converted into a reservoir for the supply of water to Llanfairfechan (by which the existing vegetation in the lake will be destroyed) I collected a few specimens of this interesting plant. It grows in rather deep water, say 8 ft., at a considerable distance from the west shore of the lake, and does not occur at all at the margin. To secure specimens, a garden rake, attached to a thick cord, was thrown as far as possible, just reaching some of the flowering stems which appeared at the surface of the water. No other *Potamogeton* was detected in the lake except *P. polygonifolius*, which is abundant close to the shore on the opposite side. I regret that it is impossible to produce nice looking herbarium specimens as the leaves, besides being undulate, are somewhat spirally twisted and cannot be spread out flat.—A. WILSON. "I, too, could see no other species than *oblongus* (*polygonifolius*), but a boat is needed to work the deeper part."—DRUCE.

Potamogeton upsaliensis Tis. Binden, Dorset, June and September 1928. Unfortunately I could get no fruiting specimens. It is said to be a hybrid of *lucens* × *perfoliatus* = a var. of the hybrid *P. decipiens*.—G. C. DRUCE. "Yes; for nomenclature see *Journ. Bot.*, 348, 1917."—I. M. ROPER.

Ruppia maritima L. (*R. spiralis* Dum.) Lady's Island Lake, Co. Wexford, August 1928.—G. C. DRUCE. "My sheet is a mixture of *Zannichellia palustris* and immature *Ruppia spiralis* Dum."—I. M. ROPER.

Cyperus longus L. Marshy ground near Carisbrooke, Hants, September 1928.—J. W. LONG. "Fine specimen of a rare plant still to be found in the Isle of Wight. I have it from Guernsey."—FRASER.

Scirpus americanus Pers. (*pungens* Roth). Near Formby, Lancs, November 1928. It was discovered by Mr R. E. D. Baker and is new to Britain.—G. C. DRUCE. "Correctly named. The sessile spikes, glumes pointed, shallowly lacerated at the ends, and the plano-convex, brown, shining, turgid and mucronate fruits are the main features of the species. Stems concavo-triquetrous. Surely this must be a new record."—FRASER.

Scirpus rufus Wahl. Nisishee, S. Harris, July 1928. Some of them have the long bract of the so-called variety, *bifolius*, of Wallroth.—G. C. DRUCE.

Eriophorum vaginatum L. By Basingstoke Canal, Woking, Surrey, May 1928.—W. BIDDISCOMBE.

Kobresia bipartita Dalla Torre. [Ref. No. Z.23.] In abundance, Widdy Bank Fell, Durham, Upper Teesdale, July 1, 1927.—J. E. LOUSLEY.

Carex pendula Huds. (Fruits.) Wood near Parkhurst House, W. Sussex, August 17, 1928.—R. J. BURDON and J. E. LITTLE.

Carex strigosa Huds. Forest of Dean, Monmouth, June 13, 1916.—L. B. HALL.

Carex humilis Leysser. [Ref. No. 5.] Hizaze Hill, Breamore, South Hants, April 11, 1925. Very abundant in the short down turf of this, the only Hampshire station. It is interesting to compare these plants with the large cultivated examples distributed in 1918.—P. M. HALL.

Carex praecox Jacq. Bramcote Hall, Notts, May 5, 1928.—R. BULLEY.

Carex tomentosa L. Westwell, Oxon, June 1928.—G. C. DRUCE.

Carex panicea L., forma. Marsh near Knaresborough, Yorks, June 18, 1927.—W. A. SLEDGE.

Carex limosa L. Near Wareham, Dorset, July 18, 1928.—L. B. HALL.

Carex limosa L. [Ref. No. 243.] Swamp, 50 feet, Burn of Funzie, Fetlar, Shetland, August 16, 1928. Native. Common in the swamp. Plants in unripe fruit. A new record for this species for H. C. Watson's county, No. 112, Shetland, discovered by me on August 16, 1928.—H. H. JOHNSTON. "Small specimens, correctly named, and a new county record, as Mr Johnston says, so far as Watson's *Top. Bot.* is concerned. The specimens show the creeping habit of the plant and the woolly hairs on the root fibres. The fruits are also a valuable asset in distinguishing this species from *C. magellanica* Lam. (*irrigua* Sm.)."—FRASER. "A very interesting addition to these Islands (v.-c. 112); it occurs in the Orkneys."—C. E. SALMON.

Carex contigua × *divulsa* ? [Ref. No. 679.] Fruiting culms. Wimbotsham, W. Norfolk, August 3, 1928. The characters which lead me to suggest the above name are:—(1) *C. contigua* points. An erect, moderately stout culm with a spike about 6 cm. long. Spikelets having, when young, brown glumes with green midribs. Utricles about 5.5 mm. long, at maturity turning chestnut-brown, but somewhat paler than in *C. contigua*, and gradually narrowed into a relatively long beak of about 1.75 mm. (2) *C. divulsa* points. The lower spikelets are often separated by twice their own length at maturity. The utricles spread only slightly, and are gradually narrowed at the base. The nut is about 3 mm. long and 1.5 mm. broad, *i.e.*, very definitely longer than broad.—J. E. LITTLE.

Carex Pairaei F. Schultz. (Fruits.) Santon Warren, Norfolk, July 25, 1928.—J. E. LITTLE.

Carex paniculata L. [Ref. No. 304.] Swamp, 50 feet, Burn of Funzie, Fetlar, Shetland, August 29, 1928. Native, very rare. Nine tufts of plants only seen. Plants in unripe fruit or in withered flower with no fruit developed. A new record for this species for H. C. Watson's county, No. 112, Shetland, discovered by me on August 29, 1928.—H. H. JOHNSTON.

Carex paradoxa Willd. Malham Tarn bog, West Yorks, altitude 1250 feet, July 27, 1928.—W. A. SLEDGE. "I cannot refer these strongly caespitose plants to any other species than *C. paradoxa* Willd., though their occurrence at an altitude of 1250 feet is remarkable and quite out of the known range of the species in England and Ireland. This Sedge is abundant here and presumably represents the *C. teretiuscula* Good., var. *pseudoparadoxa* (Gibs.), which Gibson stated was plentiful at Malham Tarn, and which poses in the *Flora of West Yorks* as *C. teretiuscula* Good., var. *Ehrhartiana* Hoppe. The plants clearly do not come under *Ehrhartiana,* however, the fruits showing no relation with *C. teretiuscula. C. pseudoparadoxa* has been discussed by Mr Salmon in *Journ. Bot.*, 14, 1916, where he shows its affinity is with *C. paniculata* rather than *C. teretiuscula,* but the characters of the fruit and the frayed sheaths at the base of the stem separate the plants from this variety, with which they would seem to agree in habit. There is a specimen from the same locality (collected in 1910) in the late John Cryer's herbarium at Leeds University labelled *Carex paradoxa*. I would accept these specimens as *C. paradoxa* Willd. without question, especially since Dr Sledge says the plants are strongly caespitose, for that is a character that will separate it from the creeping *C. teretiuscula* and from *C. paniculata,* which forms tussocks 1-4 feet high. The perigynia of the specimens are ribbed nearly to the base of the beak and I counted 21-24 of these ribs. *C. Ehrhartiana* Hoppe (*C. pseudoparadoxa* Gibs.) was first found near Manchester, and was, I understand, regarded as a state of *C. teretiuscula.*"—FRASER.

Alopecurus bulbosus Gouan. Ridge, Dorset, June 1928.—G. C. DRUCE.

Agrostis alba L., var. Whissendine, Rutland, August 4, 1916.—A. R. HORWOOD; comm. NATIONAL MUSEUM OF WALES.

Aira caryophyllea L. Sandy fields near Bulwell, Nottingham, June 13, 1928.—R. BULLEY.

Corynephorus canescens Beauv. Denes, Great Yarmouth, July 21, 1928.—R. J. BURDON. "There can be no doubt of the correctness of these specimens, judging by the closely involute, acute, pungent, scabrous and glaucous leaves. The white, clubbed awn just about equalling the barren glumes, suggests the name, from Koruna, a club."—FRASER.

Trisetum flavescens Beauv., var. *variegatum* Murr. & Koen. Boncry's Farm, Horsell, Surrey, on Bagshott Sand, June 1928.—W. BIDDISCOMBE.

Poa Parnellii Bab. [Ref. No. Z.57.] Locus classicus, High Force, Upper Teesdale, Durham, July 1927.—J. E. LOUSLEY.

Poa nemoralis L. [Ref. No. Z.30.] Riverbank near Barnard Castle, Durham, July 1927. Agreeing with *Parnellii* Bab. in the florets not being webbed, and in the upper sheath usually much exceeding its leaf. Web hairs 1-3 mm. long, glume hairs 3 mm. in length.—J. E. LOUSLEY.

Festuca arundinacea Schreb. Banks of Avon, Ashton Gate, Bristol, N. Somerset, July 13, 1928.—I. M. ROPER.

Festuca elatior L. Burgh St Martin, Norfolk, July 15, 1928.—R. J. BURDON.

Festuca Danthonii A. & G. (*ciliata* Danth.) Burton-on-Trent, Staffs, July 1928. This beautiful species still holds its ground at Burton-on-Trent although less abundant than last year.—G. C. DRUCE.

Festuca ——. [Ref. No. Z.17.] Shingle, Pagham, West Sussex, June 1928.—J. E. LOUSLEY.

Bromus rigidus Roth. Dry, rocky or sandy places, Portelet, Jersey, May 15, 1928.—L. ARSENE. "Correctly named. It is often named *B. madritensis* L., var. *rigidus* Bab. *B. madritensis* has a smooth stem and scabrid glumes. *B. rigidus* seems to be confined to the Channel Islands and has the rachis, pedicels, glumes and upper part of the stem finely pubescent. The specimens collected on May 15 are much greener than those collected on June 1, and show that the plant matures early in Jersey."—FRASER.

Bromus racemosus L. Pasture by the Severn at Lawrence Weston, West Gloucester, June 9, 1928. These examples may help the recipients towards a more decided recognition of *B. racemosus* as a specific unit. The hesitation with which it is still regarded here and there is largely due to its confused treatment by descriptive writers in the past, who, if Babington be excepted, were in doubt as to its status, some classing it as a variety of *B. commutatus* and others, on the contrary, placing the latter as a sub-species under an aggregate *racemosus*. Some botanists, again, ascribe their difficulty to the intermediates they have met with—not in this district, however, where intermediates are unknown. The figure in *English Botany* is unfortunately useless; the sub-sessile spikelets shown are never produced by *B. racemosus*. This drawing was probably made from a glabrescent form of *B. mollis*. In our Severn-side hayfields the strictly erect habit and spreading pedicels of the smaller plant now distributed compared with the tall, drooping, heavy-headed *commutatus* makes distinction easy.—J. W. WHITE.

Bromus unioloides H. B. K. Waste ground, Cowes, Isle of Wight, September 1928.—J. W. LONG.

Bromus japonicus Thunb. Waste ground, Dagenham Docks, Essex, June 13, 1928.—R. MELVILLE. "I agree. (Syn. *B. patulus*). It comes very close to *B. commutatus*, differing chiefly by having a long ligule, half-verticillate branches, bifid flowering glumes, and spreading awns." —FRASER.

Agropyron pungens Roem. & Schult., var. *littorale* (Reichb.). Bank of Avon, Sea Mills, Bristol, W. Gloster, July 26, 1928.—I. M. ROPER.

Elymus europaeus L. Dale, Derbyshire, September 1, 1928.—R. BULLEY.

Asplenium lanceolatum Huds. Hedgebanks and rock crevices on the coast, Portinfer near Gros Nez, Jersey, August 1, 1928.—L. ARSENE.

Asplenium Adiantum-nigrum L. Hedgebank, Brookfield, Bovey Tracey, South Devon, July 9, 1928.—C. WATERFALL.

Isoetes lacustris L. Llyn Ffynnon Llyffaint, Carnedd Llewelyn, Carnarvonshire, alt. 2710 ft., July 14, 1928. Probably a record for altitude in the British Isles. It occurs at 2300 ft. in Atholl (White, *Fl. of Perthshire*), and at 2338 ft. on Magillycuddy's Reeks (Hart, *Fl. of Kerry*).—A. WILSON.

Isoetes echinospora Durieu. Dorsetshire, in water and on mud, July 28, 1928, coll. L. B. HALL and C. E. SALMON. See *Journ. Bot.*, 272, 1928. " Yes; rightly named. Specimens from Littlesea were sent to me early in July by Sir W. Abbot-Anderson. They were shown him by a Cambridge undergraduate who was told at that University that they were *lacustris*. They were certainly *echinospora*."—DRUCE.

Plants received from Dr K. Rechinger, Botan. Abteilung des Naturhistorischen Museum in Wien, Austria:—*Asarum europaeum* L., *Potamogeton lucens* × *natans*, *Chaiturus marrubiastrum* L., *Eurotia ceratoides* C. A. Mey, *Marrubium peregrinum* × *vulgare*, *Primula vulgaris* Huds., *Rumex patientia* × *silvester*, *Alyssum Arduini* Fritsch, *Laserpitium Siler* L., *Euonymus latifolia* L., *Viscum album* L., *Carex contigua* Hoppe, *Rumex nivalis* Hegetschw., *Euphorbia austriaca* Kerner, *Doronicum grandiflorum* Lam., *Circaea intermedia* Ehrh., *Gentiana Sturmiana* Kerner, *Rumex crispus* × *paluster*, *Dianthus alpinus* L., *Potamogeton alpinus* Balb., *Allium sibiricum* L., *Gentiana aspera* Hegetschw., *Nephrodium oreopteris* Desv., *Gentiana asclepiadea* L.

Plants received from Prof. S. F. Beattie, Lowell Textile Institute, Lowell, Mass., U.S.A.:—*Artemisia Stelleriana* Bess., *Taxus canadensis* Marsh., *Cornus florida* L., *Polystichum acrostichoides* (Mx.) Schott, *Saxifraga virginiensis* L., *Vaccinium vacillans* Kalm., *Dulichium arundinaceum* (L.) Britt., *Thalictrum revulosum* Trel., *Trillium cernuum* L., *Sambucus racemosa* L., *Steironema lanceolatum* (Watt) Gray, *Solidago caesia* L. var. *axillaris* (Pursh) Gray, *Senecio aureus* L., *Moehringia lateriflora* (L.) Fenzl, *Desmodium marylandicum* (L.) DC., *Lobelia spicata* Lam., *Eupatorium verbenasifolium* Mx., *Solidago puberula* Nutt., *Rubus strigosa* Michx., *Viburnum dentatum* L., *V. alnifolium* Marsh., *Hypericum ellipticum* Hook., *Physostegia virginiana* (L.) Benth., *Viola lanceolata* L., *Galinsoga ciliata* (Raf.) Blake, *Gnaphalium obtusifolium* L.

ERRATA AND CORRECTIONS

Covering the plants sent by Prof. Beattie for the present and the last two distributions.

Rep. B.E.C., 285, 1926.

Line 5. For *canadense* read *canadensis.*
Line 11. For *Seriocarpus* read *Sericocarpus.*
Line 12. For *squamosa* read *scariosa.*
Line 13. For *rubricaulescens* read *subcaulescens.*
Line 17. For *Apocymum* read *Apocynum.*
Line 19. For *Scorphularia* read *Scrophularia.*
Line 21. For *dichotoma* read *dichotomum.*

Rep. B.E.C., 593, 1927.

Line 16. For *caroliniana* read *graminifolia* (L.) Nutt.
Line 18. For *caroliniensis* read *baccata* (Wang.) Koch.
Line 19. For "Raff" read "Raf."
Line 22. For *caroliniensis* read *carolinianus.*

The specimens of *Decodon verticillatus* sent are the var. *pubescens* T. & G. *Eupatorium purpureum* is probably one of the segregates of that species, re-established by Wiegand in Rhodora, 1920, 58 ff., and is most probably *E. verticillatum* Lam. *Potentilla canadensis* is the var. *simplex* (Michx.) T. & G. *Thalictrum venulosum* of this year's lot proves to be *T. polygamum* Muhl. As to some of the others, *Euthamia caroliniana* is a vexing error on my part. Knowing our two species of this genus, in labelling I gave the name of the other to the one.

F. S. Beattie.

Department of Chemistry,
Lowell Textile Institute,
Lowell, Mass.

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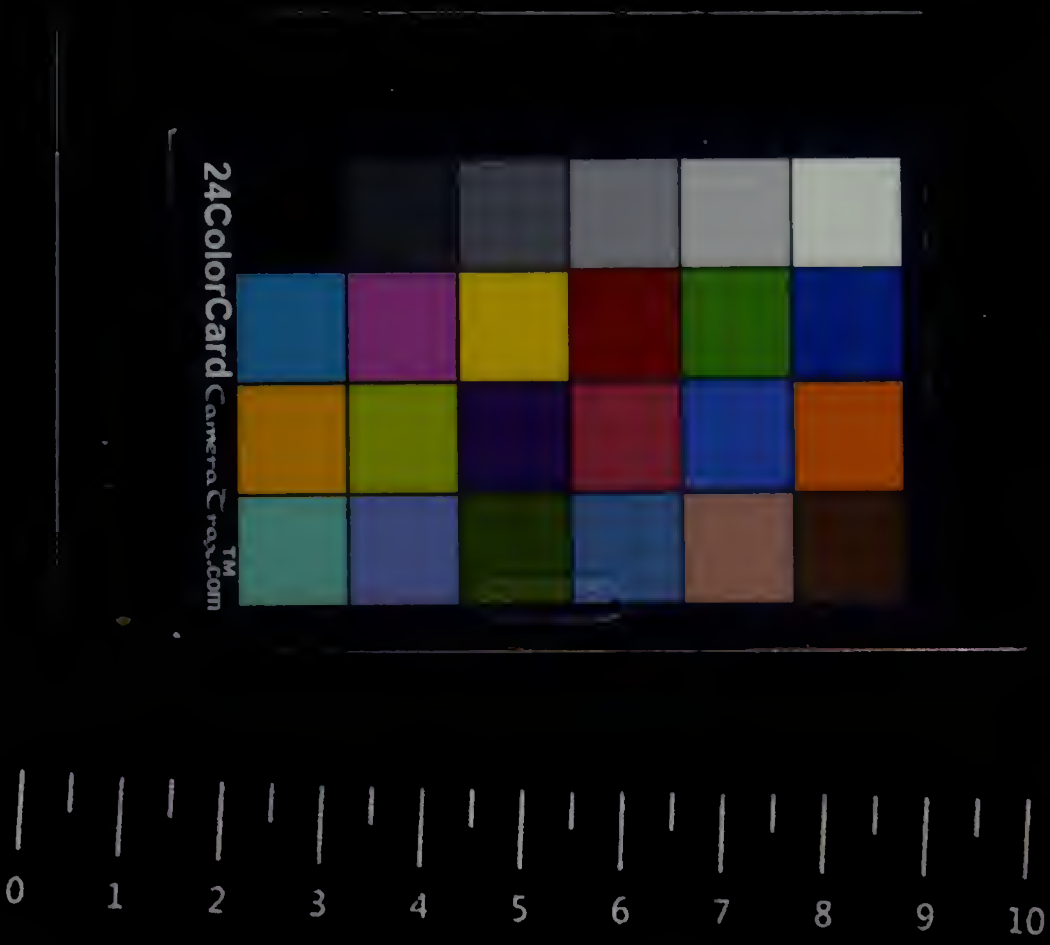
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